

AUGUST 2020

Analysis of the FY 2021 Defense Budget

AUTHORS

Todd Harrison

Seamus P. Daniels

A Report of the
CSIS DEFENSE BUDGET ANALYSIS PROGRAM

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About the Defense Budget Analysis Program

The Defense Budget Analysis (DBA) Program at CSIS leads the center's efforts to provide in-depth, nonpartisan research and analysis of defense funding issues. As part of the International Security Program at CSIS, DBA explores trends in the overall defense budget, military readiness, force structure, defense acquisitions, and military compensation in a broader effort to assess the alignment of the country's defense strategy and its resources.

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1 | Overall Trends in Defense Funding

Total Defense-related Funding

The fiscal year (FY) 2021 budget requests a total of \$716 billion for the Department of Defense (DoD), including \$10.8 billion in mandatory funding and \$69 billion in Overseas Contingency Operations (OCO) funding. This represents a reduction in DoD funding of 2.2 percent (or 4.1 percent if adjusted for inflation) from the current fiscal year, driven mainly by emergency supplemental funding, which totaled \$18.5 billion in FY 2020 but is not requested in the FY 2021 budget.¹ The level of funding requested is in keeping with the Bipartisan Budget Act of 2019 (BBA 2019), which adjusted the defense and non-defense budget caps for FY 2020 and FY 2021.² Congress can add additional funding if desired during its review and deliberations on the budget by either increasing the budget caps again, which is less likely, or adding OCO and emergency supplemental funding that is not subject to the caps.

Total defense-related funding in the budget, however, includes more than just DoD funding. As shown in Table 1, the total national defense budget (the 050 budget function) is defined to include DoD (051 subfunction), atomic energy (053 subfunction), and other defense-related (054 subfunction). The president's budget request for FY 2021 (PB21) proposes \$1.7 billion more in the discretionary budget for atomic energy than was enacted for FY 2020, a 5.0 percent increase when adjusted for inflation.³ Because the budget caps apply to the total national defense discretionary budget, excluding OCO and emergency supplemental funding, the increase in atomic energy funding effectively came from the DoD base discretionary budget, which is discussed in more detail in the following section. Atomic energy funding is used primarily by the Department of Energy for the maintenance and modernization of the nation's arsenal of nuclear warheads and bombs and the nuclear reactors used on U.S. Navy aircraft carriers and submarines.

Beyond the national defense budget function, other funding in the budget that is related to defense or is a consequence of defense includes veterans' benefits and services (700 budget function), the amortization of unfunded liabilities in the military retirement and health care funds, and tax expenditures for military personnel and veterans. These other defense-related items total \$363 billion in PB21. Notably, funding for veterans' benefits and services is 9.2 percent higher than the current

¹ All adjustments for inflation in this report are made using the GDP Chained Price Index published by OMB in Historical Table 10.1 rather than the deflators used by DoD. The defense deflators count some of the growth in labor costs for military and civilian employees as inflation and therefore understate the growth in these accounts over time. These figures (and Table 1) include the additional \$10.5 billion in additional DoD emergency supplemental funding enacted by Congress in: *Coronavirus Aid, Relief, and Economic Security Act (CARES Act)*, Public Law 116-136, Division B, Title III, <https://www.congress.gov/116/bills/hr748/BILLS-116hr748enr.pdf>.

² See: *Bipartisan Budget Act of 2019*, Public Law 116-37, Sec. 101, <https://www.congress.gov/116/plaws/publ37/PLAW-116publ37.pdf>; and Seamus P. Daniels and Todd Harrison, "What Does the Bipartisan Budget Act of 2019 Mean for Defense?," CSIS, *Critical Questions*, August 5, 2019, <https://www.csis.org/analysis/what-does-bipartisan-budget-act-2019-mean-defense>.

³ "PB," as in "PB21," refers to the "president's budget" request for a given fiscal year.

fiscal year, adjusting for inflation, and is projected to continue growing in future years, making it one of the fastest growing areas in the overall federal budget, not including emergency supplemental funding.

Table 1: Summary of Defense-related Funding in PB21

<i>(All figures in then-year dollars)</i>	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
DoD (base discretionary)	\$599.7B	\$616.5B	\$633.3B	\$636.4B	\$698.4B	\$713.2B	\$733.2B	\$750.6B
DoD (base mandatory)	\$23.8B	\$24.7B	\$8.9B	\$10.8B	\$10.9B	\$11.1B	\$10.9B	\$11.1B
DoD (OCO & Emergency)	\$71.0B	\$71.4B	\$89.8B	\$69.0B	\$23.5B	\$23.9B	\$19.3B	\$17.7B
<i>Subtotal DoD (051)</i>	<i>\$694.5B</i>	<i>\$712.6B</i>	<i>\$732.0B</i>	<i>\$716.2B</i>	<i>\$732.8B</i>	<i>\$748.2B</i>	<i>\$763.5B</i>	<i>\$779.4B</i>
Atomic Energy (disc.)	\$21.8B	\$22.4B	\$24.2B	\$26.0B	\$26.6B	\$27.2B	\$27.8B	\$28.3B
Atomic Energy (mand.)	\$1.5B	\$1.6B	\$1.6B	\$1.6B	\$1.7B	\$1.6B	\$1.6B	\$1.6B
Other Defense-related (disc.)	\$8.4B	\$8.6B	\$9.2B	\$9.1B	\$10.5B	\$10.7B	\$10.7B	\$11.3B
Other Defense-related (mand.)	\$0.6B	\$0.6B	\$0.6B	\$0.6B	\$0.6B	\$0.5B	\$0.5B	\$0.5B
<i>Subtotal National Defense (050)</i>	<i>\$726.8B</i>	<i>\$745.7B</i>	<i>\$767.7B</i>	<i>\$753.5B</i>	<i>\$772.1B</i>	<i>\$788.3B</i>	<i>\$804.1B</i>	<i>\$821.2B</i>
Veterans Benefits & Svcs (disc.)	\$82.0B	\$86.9B	\$93.0B	\$105.3B	\$111.8B	\$111.8B	\$111.8B	\$111.8B
Veterans Benefits & Svcs (mand.)	\$110.4B	\$107.8B	\$121.4B	\$133.5B	\$144.0B	\$154.7B	\$165.0B	\$175.5B
<i>Subtotal Veterans Benefits & Svcs (700)</i>	<i>\$192.4B</i>	<i>\$194.8B</i>	<i>\$214.4B</i>	<i>\$238.8B</i>	<i>\$255.8B</i>	<i>\$266.5B</i>	<i>\$276.8B</i>	<i>\$287.3B</i>
Amortization of Unfunded Military Retirement Liabilities	\$89.4B	\$93.7B	\$98.5B	\$101.7B	\$104.2B	\$107.6B	\$111.1B	\$114.7B
Defense-related Tax Expenditures	\$22.4B	\$21.8B	\$23.1B	\$22.5B	\$22.9B	\$23.6B	\$24.5B	\$25.4B
Total Defense-related	\$1,031.1B	\$1,056.0B	\$1,103.7B	\$1,116.5B	\$1,155.0B	\$1,186.0B	\$1,216.4B	\$1,248.6B

Trends in Atomic Energy Funding

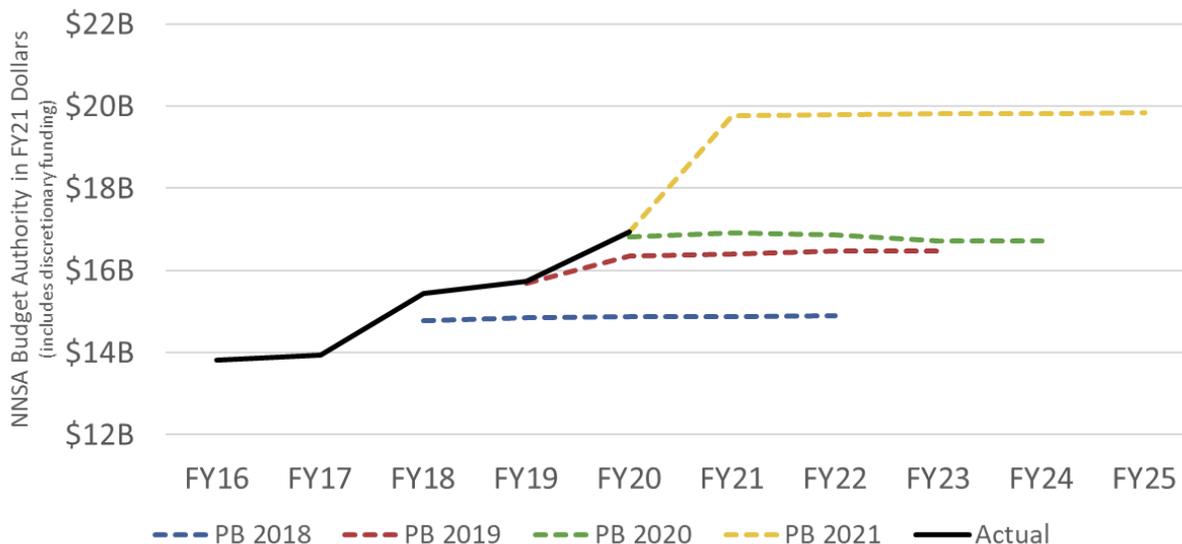
In the lead-up to the release of the FY 2021 budget request, reports emerged surrounding internal disagreements within the Trump administration over funding for atomic energy activities (053 subfunction), specifically the National Nuclear Security Administration (NNSA). The NNSA's budget of approximately \$20 billion for FY 2021, submitted to the Office of Management and Budget (OMB) in the fall, faced cuts from OMB officials seeking to reduce the requested figure to \$17.5 billion.⁴ With the support of Republican members of the Congressional Armed Services Committees, NNSA Director Lisa Gordon-Hagerty secured a \$19.8 billion request over the opposition of OMB and recently-confirmed Energy Secretary Dan Brouillette.⁵

⁴ Steve Hayes, "Budget Squabble Threatens U.S. Nuclear Modernization Efforts," The Dispatch, January 21, 2020, <https://thedispatch.com/p/budget-squabble-threatens-us-nuclear>; and Aaron Mehta and Joe Gould, "In nuclear spending fight, it's Trump's Hill allies vs. White House Budget office," Defense News, January 23, 2020, <https://www.defensenews.com/congress/2020/01/23/in-nuclear-spending-fight-its-trump-allies-vs-white-house-budget-office/>.

⁵ Ibid.; Joe Gould, "Trump will seek 20% budget boost for nukes, says Inhofe," Defense News, January 28, 2020, <https://www.defensenews.com/congress/2020/01/28/trump-will-seek-20-budget-boost-for-nukes-says-inhofe/>; and Aaron Mehta, "Trump seeks \$46 billion for nuclear weapons programs in budget request," Defense News, February 10, 2020, <https://www.defensenews.com/smr/federal-budget/2020/02/10/trump-budget-requests-46-billion-for-nuclear-weapons-programs/>.

The NNSA’s budget accounts for over 75 percent of the total request for atomic energy activities in FY 2021 and represents a 16.7 percent real increase over the NNSA’s FY 2020 enacted budget. However, this increase was not planned in last year’s budget request (PB20). As Figure 1 shows, the NNSA projected that it would need \$16.9 billion in FY 2021 and that its topline would fall by 1.2 percent in real terms through FY 2024. The FY 2021 request is a 16.8 percent increase above the projected FY 2021 level in PB20. Adjusted for inflation, funding for the NNSA is projected to remain flat at the FY 2021 requested level through FY 2025, suggesting this is a sustained increase rather than a one-time boost.

Figure 1: NNSA Funding Projections versus Actuals, FY 2016 – FY 2021

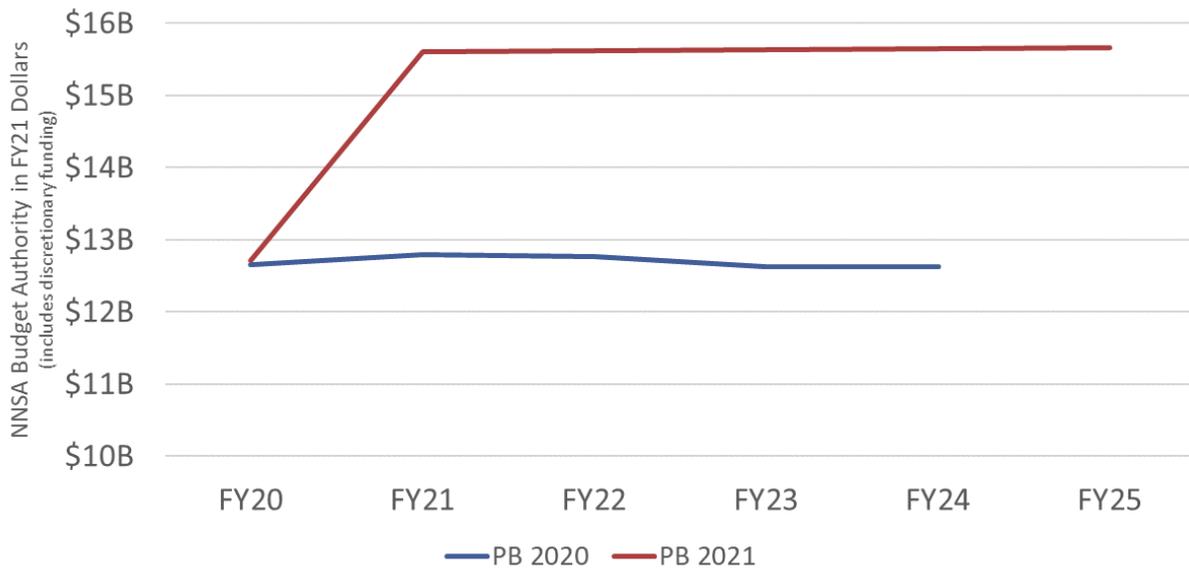


The nearly \$3 billion increase in the NNSA’s requested budget for FY 2021 comes at the expense of funding for DoD programs. Given that the NNSA is funded entirely out of the base national defense budget rather than OCO and the topline for the FY 2021 base budget was previously set at \$671.5 billion by BBA 2019, DoD’s share of base funding fell to accommodate increased resources for the NNSA. Secretary Brouillette acknowledged this in February, noting “DoD is covering the cost for this increase.”⁶

Nearly all the funding increase goes toward Weapons Activities programs within the NNSA. Figure 2 compares the planned funding levels for weapons activities in PB20 and PB21. The FY 2021 requested level is approximately a 21.9 percent increase above the planned level for Weapons Activities in PB20. However, the topline remains flat over the five-year plans known as the Future Years Nuclear Security Program (FYNSP) as projected in last year’s NNSA request.

⁶ Joe Gould, “US energy secretary talks arms control, nuclear budget boost and Iranian cyberattacks,” Defense News, February 16, 2020, <https://www.defensenews.com/congress/2020/02/16/energy-secretary-dan-brouillette-talks-arms-control-nuclear-budget-boost-and-iranian-cyber-attacks/>.

Figure 2: NNSA Weapons Activities Funding Projected in PB20 versus PB21



Tracking which programs within the Weapons Activities account received an increase is more difficult given that the NNSA recategorized the subcategories which fall under the account in PB21.⁷ However, the Infrastructure and Operations subcategory, which remained unchanged in the recategorization, is requesting nearly \$1.4 billion more in funding, or 44.5 percent above what was projected for FY 2021 in PB20. The request for operating funds, which cover costs including facilities’ operations, maintenance, and repair, is almost \$850 million more than what was projected in PB20, while construction costs are over \$500 million higher.

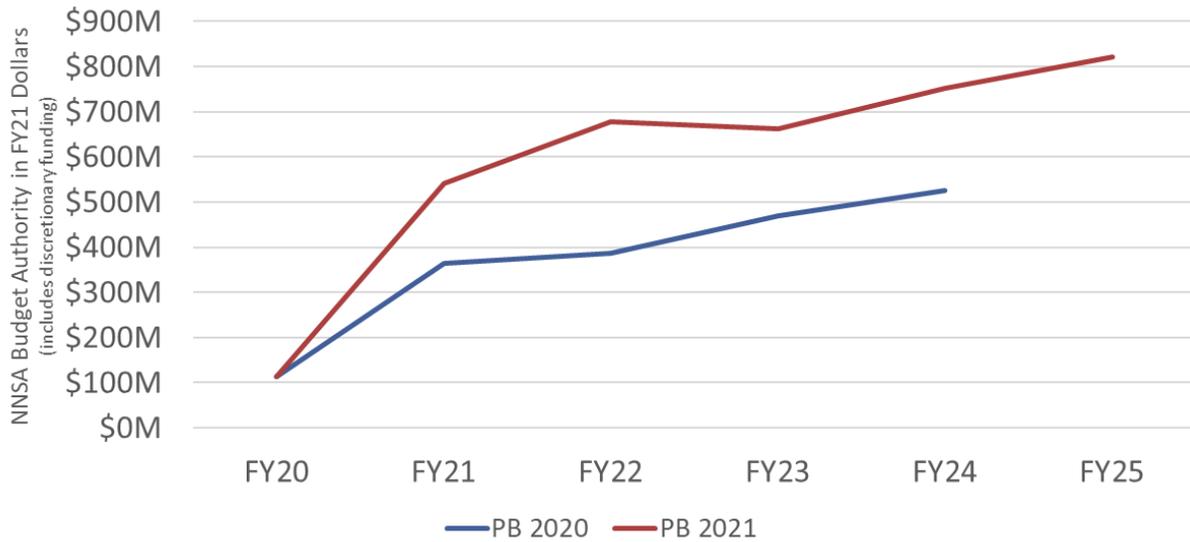
Among notable weapons stockpile programs, the W87-1 modernization program requested approximately \$178 million more than the FY 2021 projected level in the PB20. This warhead is being designed for the Ground Based Strategic Deterrent (GBSD) missile that will replace the existing Minuteman III as the new ground-based leg of the nuclear triad. As Figure 3 illustrates, the gap between the PB20 and PB21 projected levels of funding continues into the FYNSP. Adjusted for inflation, the total cost differential between the two projections from FY 2021 to FY 2024 is \$887 million. According to an NNSA statement to *Inside Defense*, updated cost modeling suggested that “the early phase of the program was underfunded, so this represents a change in the profile rather than a change in total cost.”⁸ The NNSA also expressed confidence that “recent technical down-selects will significantly lower costs,” although it is not clear when those savings will be realized.⁹

⁷ For Weapons Activities subcategory changes, see Department of Energy Office of Chief Financial Officer, *FY 2021 Congressional Budget Request: National Nuclear Security Administration, Volume 1* (Washington, DC: February 2020), 97, https://www.energy.gov/sites/prod/files/2020/03/f72/doe-fy2021-budget-volume-1_2.pdf#page=97.

⁸ Sara Sirota, “New cost models show NNSA underfunded early phase of GBSD’s W87-1 warhead program,” *Inside Defense*, March 20, 2020, <https://insidedefense.com/daily-news/new-cost-models-show-nnsa-underfunded-early-phase-gbsds-w87-1-warhead-program>.

⁹ *Ibid.*

Figure 3: W87-1 Modernization Program Funding Projected in PB20 versus PB21



Trends in the DoD Budget

DoD’s budget request for FY 2021, including discretionary, mandatory, OCO, and emergency supplemental funding, is 2.7 percent less in real terms than was enacted in FY 2020 and \$7.0 billion less (1.0 percent) than was projected for FY 2021 in last year’s budget request. The difference between what was projected for FY 2021 in PB20 and what is requested for FY 2021 this year is notable because it indicates shifts in planning assumptions, strategic priorities, and “fact of life” changes that occurred over the past year.

Figure 4: DoD Funding for FY 2021 in President’s Budget Fiscal Year 2020 (PB20) versus PB21 by Title

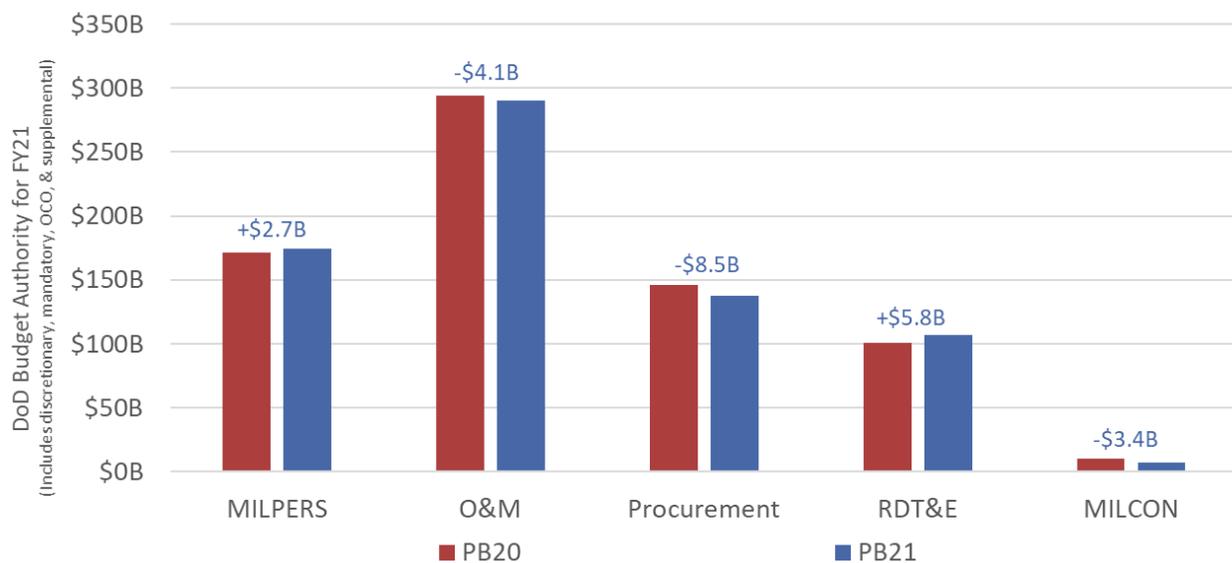


Figure 4 shows the change in projected FY 2021 funding from PB20 and PB21. Despite a net reduction of \$7.0 billion compared to the PB20 projection for FY 2021, some parts of the budget are higher than previously projected. The largest increase is in the research, development, test, and evaluation (RDT&E) title of the budget, which is \$5.8 billion larger than previously projected, followed by funding for military personnel (MILPERS), which is \$2.7 billion higher. These increases are offset by \$4.1 billion in cuts to operation and maintenance (O&M), \$8.5 billion in procurement, and \$3.4 billion in military construction (MILCON) relative to what was previously planned for FY 2021.

Looking at the first year of the request, however, only tells part of the story. Comparing the five-year plans, also known as the Future Years Defense Program (FYDP), included with each budget reveals more significant long-term shifts in planning and priorities. Historically, the FYDP has not been a good indicator of where the budget will head in future years. In this respect, the FYDP is at best a lagging indicator. Instead, the FYDP is best understood as a policy statement on the overall direction the administration wants to go and the plans and priorities it intends to pursue at the time the budget request is submitted to Congress. The FYDP can and usually will change from year to year as budgetary conditions and thinking evolve. Changes in the FYDP therefore provide insight into how the Pentagon's plans and priorities have changed since the last budget was submitted.

Military Personnel

The MILPERS title of the budget funds the pay, allowances, retirement accrual, and other forms of compensation for military personnel. MILPERS does not include funding for civilian DoD personnel or the Defense Health Program, both of which are primarily funded in the O&M title of the budget. Beyond the \$2.7 billion in additional MILPERS funding requested for FY 2021, DoD increased its projection for future MILPERS funding across the five-year planning horizon, as shown in Figure 5. Between FY 2021 and FY 2024, DoD is planning for an average of \$1.9 billion more each year in MILPERS funding than previously projected, or \$7.7 billion in total over the next four years. This upward revision is not due to a larger force than previously planned. PB20 projected that active component end strength would grow to 1,367,200 by FY 2024.¹⁰ But PB21 reduces the five-year end strength projection by 6,100 personnel, primarily from the Navy and Marine Corps.¹¹

The increase in MILPERS funding appears to be due in part to a higher military pay raise and higher allowances for housing. The PB20 request projected a pay raise of 2.6 percent in FY 2021, but the PB21 budget requests a raise of 3.0 percent. Similarly, PB20 requested an overall increase in the basic allowance for housing (BAH) of 2.9 percent, but PB21 requests an increase of 2.9 percent for the Army, 3.3 percent for the Air Force and Space Force, and 3.7 percent for the Navy and Marine Corps.¹² Larger increases in pay and allowances in FY 2021 raise costs beyond FY 2021 because future increases will be

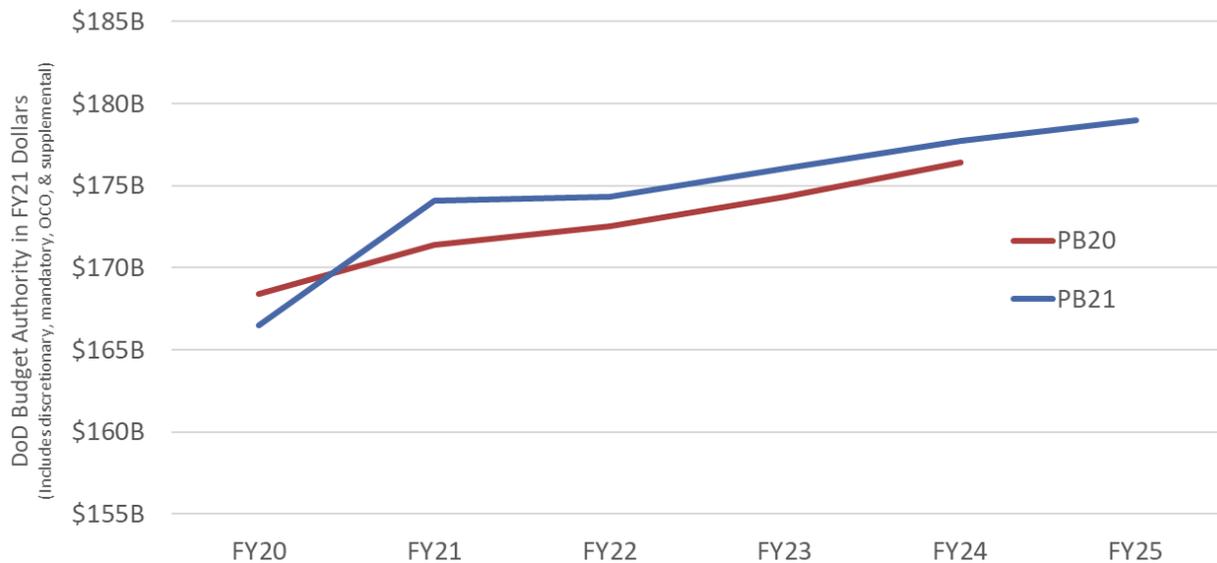
¹⁰ Office of the Under Secretary of Defense (Comptroller), *Briefing on Fiscal Year 2020 Budget Request* (Washington, DC: March 2019), 12, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2020/fy2020_Budget_Request.pdf.

¹¹ Office of the Under Secretary of Defense (Comptroller), *Briefing on Fiscal Year 2021 Budget Request* (Washington, DC: February 2020), 13, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2021/fy2021_Budget_Request.pdf.

¹² "2021 BAH Basic Allowance for Housing Rates," MilitaryBenefits.info, <https://militarybenefits.info/2021-bah-basic-allowance-for-housing-rates/>.

based on a higher base level of pay and allowances. Additionally, other components of compensation, such as the retirement pay accrual, are a function of the basic pay level, which means that a higher level of basic pay causes these related costs to increase as well.

Figure 5: MILPERS Funding Projected in PB20 versus PB21



Operation and Maintenance

The O&M title of the budget funds the training, maintenance, and day-to-day operations of DoD. Nearly two-thirds of DoD’s 806,000 civilian employees are funded through O&M, along with the Defense Health Program, which provides health care to 9.6 million service members, military retirees, and their dependents.¹³ The request includes the same placeholder amounts for OCO funding in future years: \$20 billion in FY 2022 and FY 2023 and \$10 billion in FY 2024 and FY 2025. For this analysis, the OCO placeholder is included in O&M because the vast majority of OCO funding in the past has been in O&M accounts.

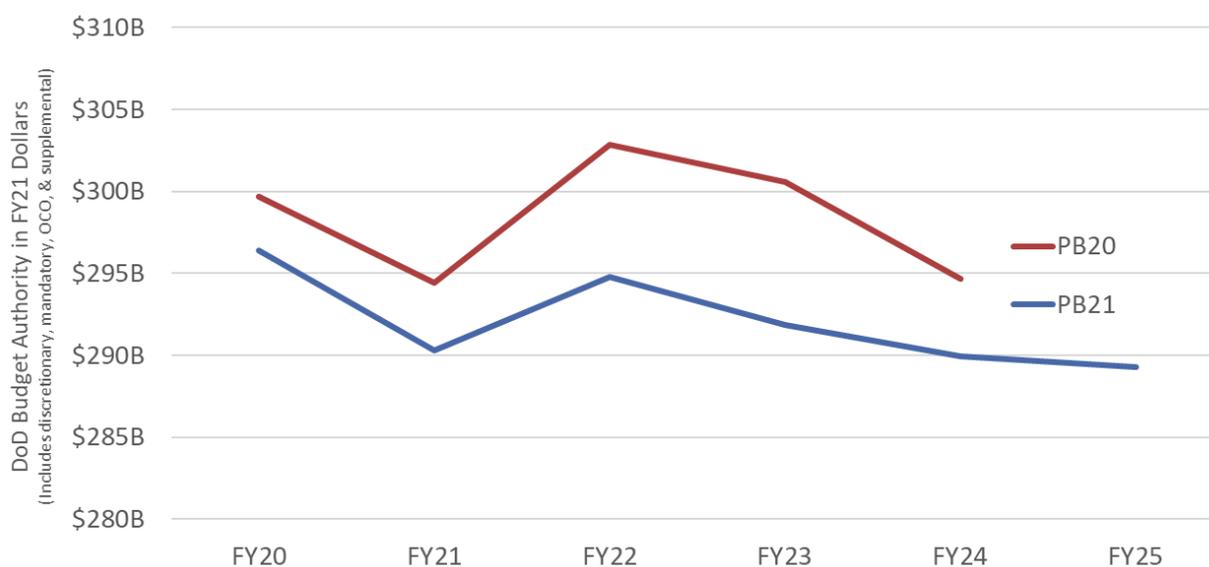
The request indicates that DoD is projecting a lower overall level of O&M funding over the FYDP than in the previous budget request—\$4.1 billion less in FY 2021 and \$26.5 billion less over the four years the requests have in common (FY 2021 through FY 2024). Historically, O&M costs normalized for the size of the force have grown at a compound annual rate of 2.6 percent above inflation.¹⁴ Thus, to maintain the same size force structure the O&M portion of the budget is likely to need growth above inflation each year, which is not projected in PB21.

¹³ Office of the Under Secretary of Defense (Comptroller), *Defense Budget Overview* (Washington, DC: revised May 13, 2020), 2-4, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2021/fy2021_Budget_Request_Overview_Book.pdf.

¹⁴ The compound annual growth rate for FY 1948 to FY 2020 is calculated using base budget O&M funding (including discretionary and mandatory) minus funding for the Defense Health Program divided by total active end strength and adjusted for inflation using the GDP chained price index.

Part of the reduction in O&M funding over the FYDP can be attributed to a lower pay raise for civilian employees in FY 2021. The PB20 request was based on civilian pay raises of 2.1 percent in FY 2021 and beyond, whereas the PB21 request assumes a 1.0 percent raise in FY 2021 and 2.1 percent in future years. As was previously noted with the military pay raise, a lower raise for civilian employees in one year reduces costs in all future years because future pay raises will be based on a lower base level of pay. This assumption in the budget may prove risky because Congress may not agree to the lower raise. In last year’s request, for example, DoD proposed no raise for civilians, and Congress ultimately granted a 3.1 percent raise. A countervailing trend, however, is that the new request projects a larger DoD civilian workforce than previously planned, with PB20 projecting a total workforce of 790,000 FTEs (full-time equivalents) and PB21 projecting 806,000 FTEs. Much of the growth in civilian employees relative to last year’s plan is in the Air Force and defense-wide agencies.

Figure 6: O&M Funding Projected in PB20 versus PB21

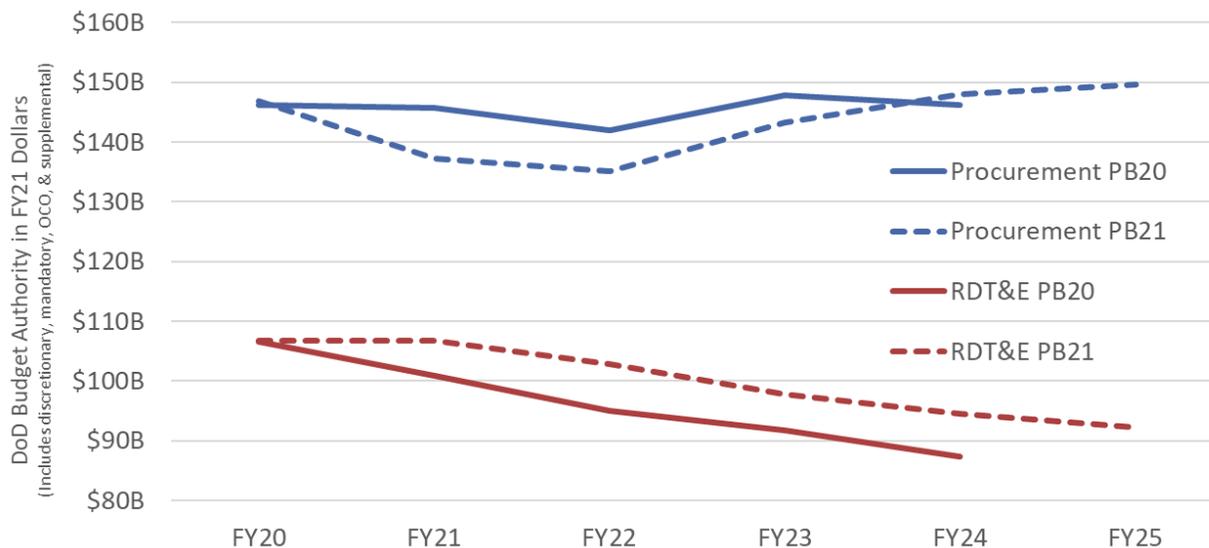


Procurement and RDT&E

The acquisition portion of the DoD budget, which consists of the procurement and RDT&E titles, shifted noticeably in PB21 relative to PB20. As shown in Figure 7, procurement funding is down \$8.5 billion (or 5.8 percent) for FY 2021 compared to the previous projection for the same year, and procurement is \$18.5 billion (or 3.1 percent) lower over the four-year period the two requests have in common (FY 2021 to FY 2024). RDT&E funding, however, fared differently, increasing by \$5.8 billion (or 5.8 percent) in FY 2021 and \$27.7 billion (or 7.2 percent) over the four-year period relative to PB20. While the increase in RDT&E funding in FY 2021 could be a sign that DoD is rebalancing its portfolio of investments in new technologies and weapons to better align with the National Defense Strategy (NDS), the fact that RDT&E funding is still projected to decline in real terms over the following four years could undercut that narrative. Moreover, procurement funding is projected to decline through FY 2022 and rebound by FY 2025 to just 1.8 percent higher in than it is in FY 2020. This means that by FY

2025, when DoD is expected to be in the middle of its long-awaited modernization bow wave, total acquisition funding would be 4.7 percent less in real terms than it is today.¹⁵

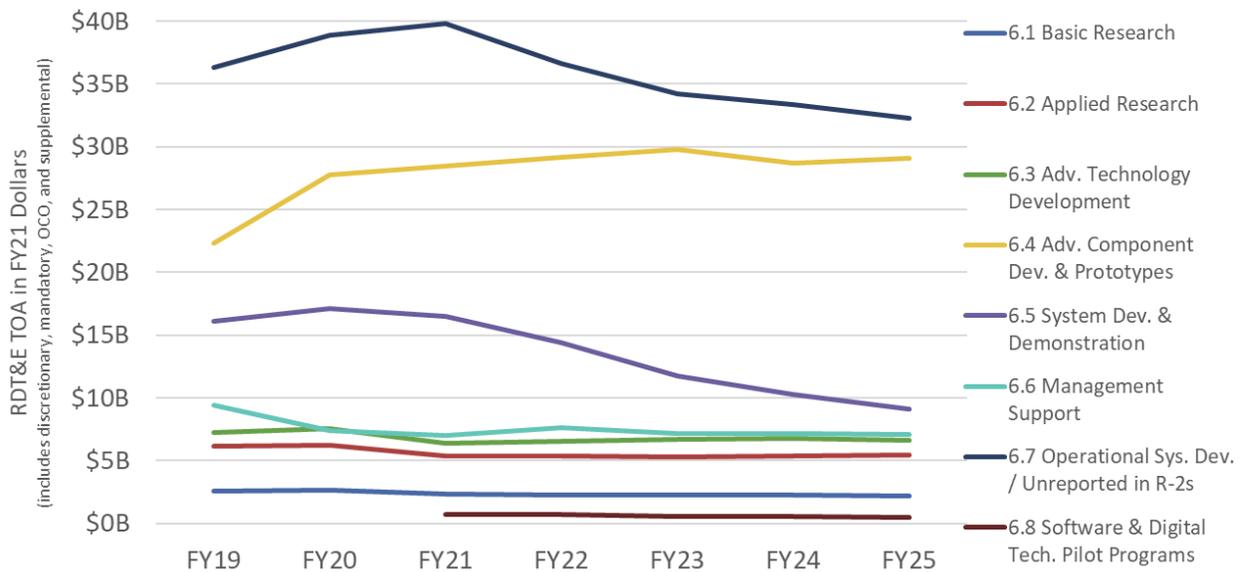
Figure 7: Procurement and RDT&E Funding Projected in PB20 versus PB21



The projected decline in RDT&E funding over the next five years is mostly concentrated in one part of the budget. As shown in Figure 8, the RDT&E budget is divided into budget activities that correspond to different phases of the development process. Funding for Basic Research (6.1), Applied Research (6.2), and Advanced Technology Development (6.3)—which are collectively referred to as the Science and Technology (S&T) portion of the budget—are relatively stable over the five-year projection, as is funding for Management Support (6.6). Advanced Component Development and Prototypes (6.4) funding grows slightly over the request—2.2 percent in real terms from FY 2021 through FY 2025. At \$39.8 billion in the FY 2021 request, Operational Systems Development (6.7) is the largest category of RDT&E funding. It includes many classified funding lines that do not report projections for future years, although the total of unreported lines can be calculated by comparing the total RDT&E budget reported by DoD to the sum of all individual RDT&E lines in the R-2 budget justification documents. A main driver of the overall drop in RDT&E funding is System Development and Demonstration (6.5) funding, which falls by 45 percent (or \$7.4 billion) in real terms from FY 2021 through FY 2025. System Development and Demonstration (SDD) funding is associated with relatively mature programs that have passed Milestone B and are nearing initial production. This suggests that existing programs are anticipated to move out of SDD and into production at a faster pace than newer, less mature programs will move into SDD.

¹⁵ For more discussion of the projected modernization bow wave, see: Todd Harrison, *Defense Modernization Plans Through the 2020s: Addressing the Bow Wave* (Washington, DC: CSIS, January 2016), https://csis-website-prod.s3.amazonaws.com/s3fs-public/legacy_files/files/publication/160126_Harrison_DefenseModernization_Web.pdf.

Figure 8: RDT&E Funding by Budget Activity



A notable change in PB21 is the inclusion of a new RDT&E budget activity category named Software & Digital Technology Pilot Programs (6.8). The request includes eight funding lines in this budget activity, shown in Table 2, that total \$697 million in FY 2021 and \$3.1 billion over the FYDP. These funding lines are not new efforts; they are transfers from other parts of the budget. The new 6.8 budget activity is in response to a recommendation from the Defense Innovation Board (DIB) in 2019, which called for DoD to “create a new appropriations category that allows (relevant types of) software to be funded as a single budget item, with no separation between RDT&E, production, and sustainment; remove cost and schedule triggers associated with hardware-focused regulations and processes.”¹⁶ The proposed change would not go as far as the DIB recommended, but DoD has indicated that if the new budget activity within RDT&E proves effective it will consider creating a new appropriations title for software in the future.¹⁷

¹⁶ J. Michael McQuade et al., *Software is Never Done: Refactoring the Acquisition Code for Competitive Advantage* (Washington, DC: Defense Innovation Board, March 2019), 45, https://insidedefense.com/sites/insidedefense.com/files/documents/2019/mar/03212019_dib.pdf.

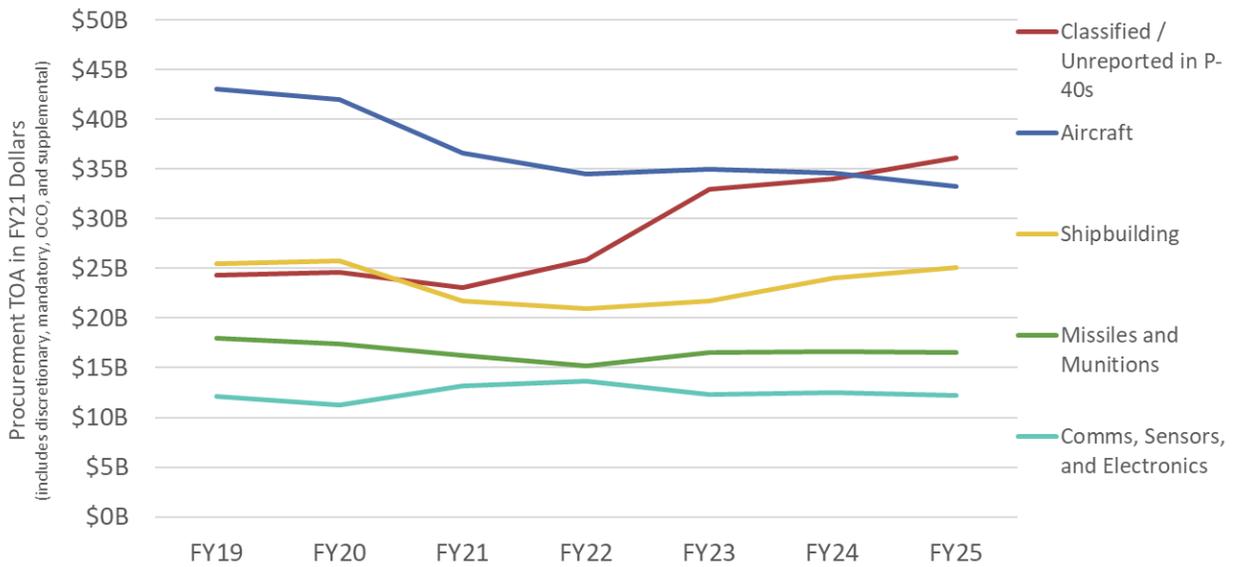
¹⁷ Justin Doubleday, “DOD proposes new pilot programs to fund software through single budget activity,” Inside Defense, February 25, 2020, <https://insidedefense.com/daily-news/dod-proposes-new-pilot-programs-fund-software-through-single-budget-activity>.

Table 2: Budget Activity for Software & Digital Technology Pilot Programs (6.8)

Service	PE	PE Title	FY21	FY22	FY23	FY24	FY25
Space Force	1203614SF	JSpOC Mission System	\$149,742K	\$156,446K	\$152,350K	\$120,260K	\$121,129K
Army	0608041A	Defensive CYBER - Software Prototype Development	\$46,445K	\$115,064K	\$109,787K	\$105,851K	\$92,632K
Navy	0608013N	Risk management Information - Software Pilot Program	\$14,300K	\$14,355K	\$13,112K	\$12,568K	\$12,819K
Navy	0608231N	Maritime Tactical Command and Control (MTC2) - Software Pilot Program	\$10,868K	\$11,204K	\$11,520K	\$11,789K	\$11,990K
Defense-wide	0608648D8Z	Acquisition Visibility - Software Pilot Program	\$16,848K	\$17,150K	\$16,803K	\$16,519K	\$16,969K
Defense-wide	0308588D8Z	Algorithmic Warfare Cross Functional Teams - Software Pilot Program	\$250,107K	\$252,176K	\$120,193K	\$121,255K	\$122,180K
Defense-wide	0608197V	National Background Investigation Services - Software Pilot Program	\$121,676K	\$124,587K	\$127,330K	\$129,371K	\$131,966K
Defense-wide	0303150K	Global Command and Control System	\$86,750K	\$37,928K	\$33,364K	\$33,097K	\$34,934K

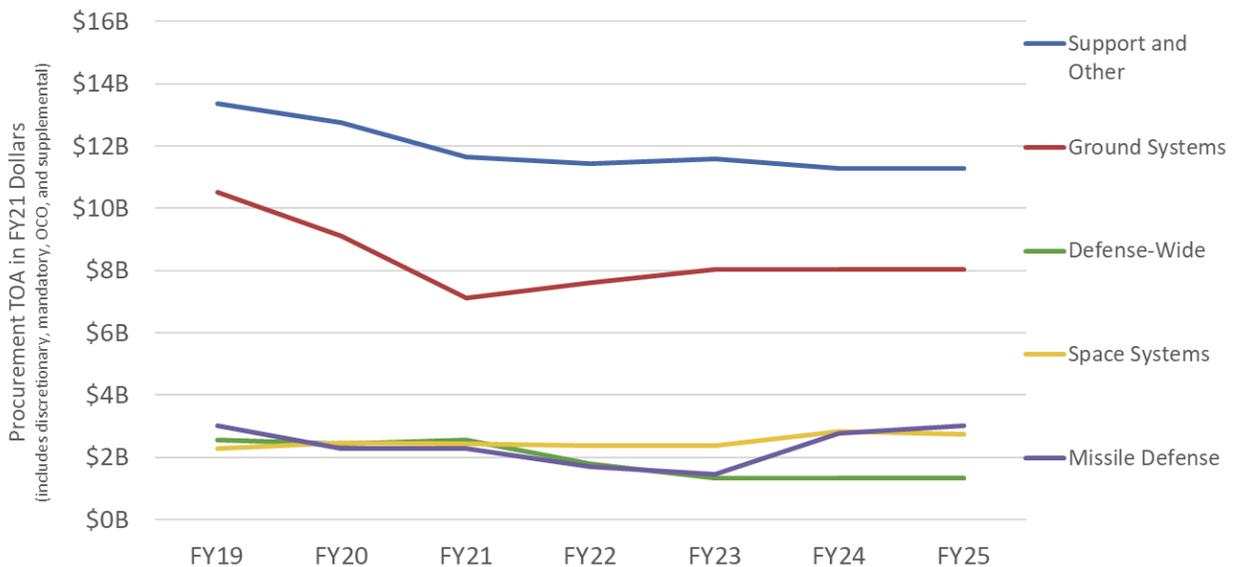
As previously mentioned, procurement funding declines in FY 2021 relative to both last year's projection for FY 2021 and the current level of funding in FY 2020. As shown in Figure 9, aircraft funding is projected to continue declining through FY 2025, falling by a total of 21 percent in real terms over the next five years. This is due in part to the end of P-8 production and planned reductions in other Navy aircraft programs. Funding for shipbuilding and construction declines through FY 2022 due to cuts in the number of Virginia-class subs, DDG-51 destroyers, and amphibious transport dock ships (LPDs) planned in those years. However, the shipbuilding budget returns to near its current level by FY 2025. Funding for communications, sensors, and electronics is projected to increase by 21 percent in real terms over the next two years. Most classified funding lines do not include a projection for future years, but the overall level of unreported funding can be estimated by comparing the total procurement budget reported by DoD to the sum of all individual procurement lines in the P-40 budget justification documents. In addition to classified funding, unreported funding lines in future years also include programs that are planned to begin procurement after FY 2021 and therefore are not yet reported.

Figure 9: Procurement Funding by Category



Procurement for other categories of items, shown in Figure 10, reveals mixed trends. Ground systems procurement funding is projected to decline by 17 percent from FY 2020 to FY 2025 due in part to reductions in the Abrams Upgrade Program, Armored Multi-Purpose Vehicle, and other vehicle programs. Space procurement funding, which transitions to the newly created Space Force in PB21, is projected to grow by 13 percent in real terms over the next five years, although it remains just 1.8 percent of total DoD procurement funding. Missile defense procurement receives a boost in FY 2024, when the Missile Defense Agency increases SM-3 Block IIA production to 51 per year.

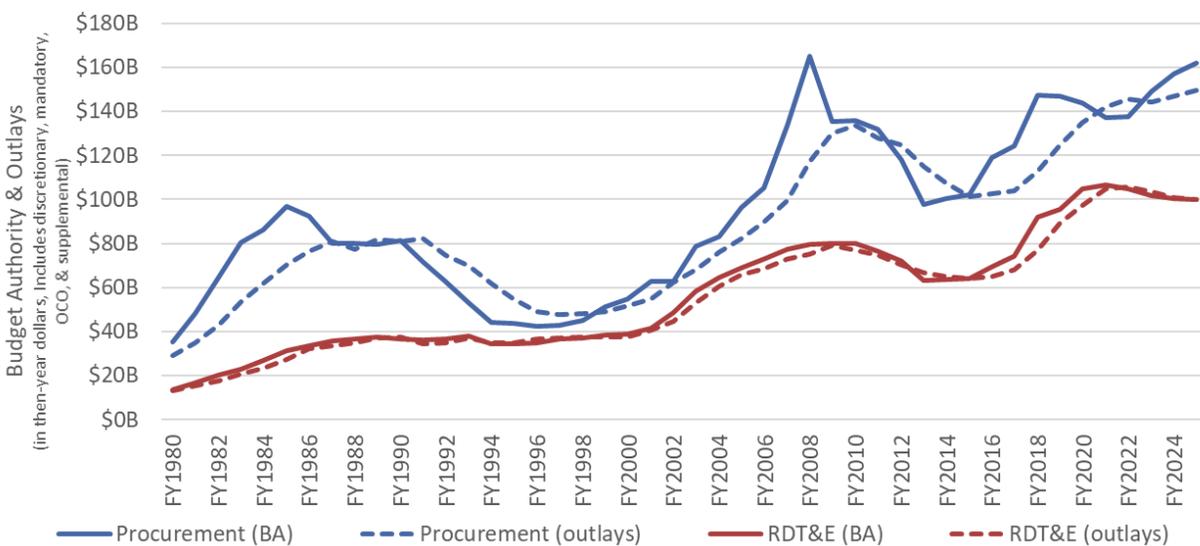
Figure 10: Procurement Funding by Category (continued)



In budget terminology, budget authority (and total obligational authority) represent when the policy decision is made to allocate money for a particular purpose, and outlays represent when money is paid from the treasury. For RDT&E and procurement, changes in budget authority (BA) are typically observed a few years later as changes in outlays, as shown in Figure 11. The trajectory of outlays is important to the defense industry and investors because it indicates the overall trajectory and timing of corporate revenues. Outlays tend to lag BA more in procurement than in RDT&E because procurement funding has a three-year availability for obligation (five years for shipbuilding), while RDT&E is only available for two years.

In the budget cycle of the 1980s, procurement BA peaked in FY 1985, while procurement outlays peaked in FY 1987. In the downturn of the 1990s, procurement BA bottomed out in FY 1996, and outlays hit bottom in FY 1997. In the budget cycle of the 2000s, procurement BA peaked in FY 2008 and reached a bottom in FY 2013, while outlays peaked in FY 2010 and bottomed out in FY 2015. A peculiarity of the most recent budget request is that procurement BA peaked in FY 2018 but is projected to begin growing again before outlays have fully peaked.

Figure 11: Budget Authority versus Outlays for Procurement and RDT&E



OCO and Emergency Supplemental Funding

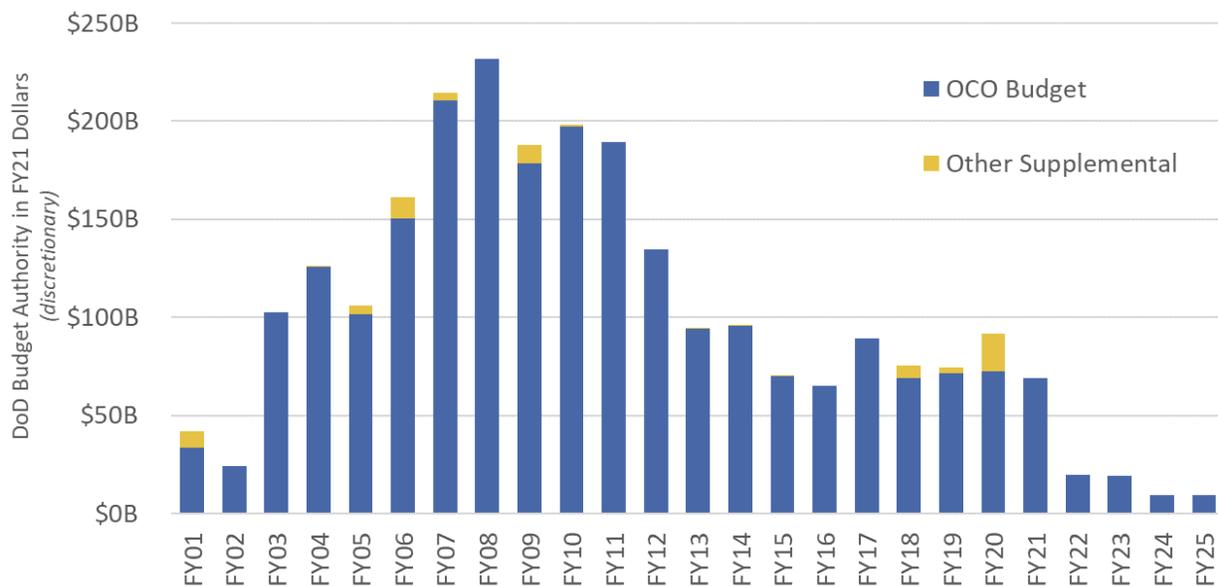
The FY 2021 budget requests \$69.0 billion in Overseas Contingency Operations funding. This amount is in line with the BBA 2019 budget deal, which raised the caps on the defense budget and specified the amount of OCO funding for FY 2020 and FY 2021. Since the BCA was enacted, OCO and emergency supplemental funding has remained separate from the funding under the caps, making it a convenient loophole for both Congress and the executive branch to enact more funding without breaching the caps.

In the FY 2021 request, DoD divides the OCO budget into three categories of funding. Direct war requirements total \$20.5 billion in FY 2021 and include the incremental costs of ongoing combat and

combat support operations in Afghanistan (\$14 billion) and Iraq and Syria (\$7 billion). At \$32.5 billion, the largest share of OCO funding is for enduring requirements—activities that are expected to continue even if combat operations end. These include the costs of overseas basing, depot maintenance, the European Deterrence Initiative (EDI), and security cooperation funding (including \$250 million for the Ukraine Security Assistance Initiative). The third category is OCO for base requirements, which totals \$16.0 billion and is used for a variety of base budget activities.

The budget request does not include a detailed projection for OCO funding in future years. Instead, it includes a placeholder of \$20 billion per year in FY 2022 and FY 2023 and \$10 billion in FY 2024 and FY 2025. This is consistent with the current level of direct war costs. Other enduring and base budget activities currently funding in OCO return to the base budget in FY 2022 and beyond and are included in the FYDP projections. Importantly, the budget does not project that enduring and base budget activities currently funded in OCO will displace other base budget funding when these items return to the base budget. Rather, the topline base budget increases to accommodate these activities. This is possible because the BCA budget caps end in FY 2021 and the OCO loophole will no longer be needed in FY 2022 and beyond.

Figure 12: OCO and Supplemental Funding

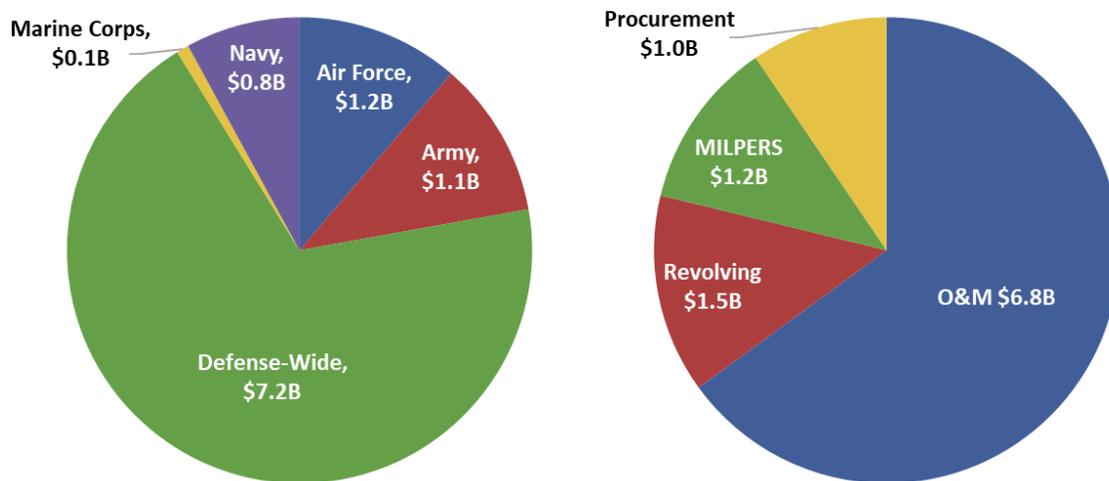


As shown in Figure 12, in most years since FY 2001, DoD has received emergency supplemental funding in addition to OCO funding. Emergency supplemental funding can include funds to repair damage to DoD facilities and support local authorities in responding to hurricanes and other natural disasters. In FY 2009, DoD also received \$7.4 billion as part of the American Recovery and Reinvestment Act.¹⁸ After the budget request was submitted in February 2020, DoD received \$10.5

¹⁸ *American Recovery and Reinvestment Act of 2009*, Public Law 111-05, Division A, Title III, <https://www.govinfo.gov/content/pkg/PLAW-111publ5/pdf/PLAW-111publ5.pdf>.

billion in emergency supplemental funding as part of the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) to support its response to the Covid-19 pandemic.¹⁹ Figure 13 shows DoD CARES Act funding by department and title. The majority of the funding goes to defense-wide and O&M accounts, namely the Defense Health Program, although the law includes a provision that allows DoD to reprogram these funds to other accounts as needed to support pandemic relief operations.²⁰ Section 3610 of the CARES Act also gives DoD and other federal agencies the authority to continue paying contractors even if their staff are not able to work due to the public health emergency. Importantly, the bill does not provide additional funding for this authority.²¹

Figure 13: DoD CARES Act Funding by Department and Title



Unfunded Priorities

In addition to the funds included in the budget request, each year the Services and Combatant Commands (COCOMs) submit unfunded priority lists to Congress. Congress requests these lists to understand the additional priorities that DoD was unable to accommodate within the requested topline budget. In the FY 2010 budget cycle, then Secretary of Defense Robert Gates attempted to curtail this end run around the normal budget process by requiring the service chiefs to submit them to him for review before sending them to Congress.²² Gates was successful in his efforts, with the total amount of unfunded priorities falling by an order of magnitude in FY 2010 and remaining low for years after.²³ However, the unfunded priorities lists came roaring back in FY 2015, and the FY 2017 National

¹⁹ CARES Act, Division B, Title III.

²⁰ Ibid., Sec. 13001.

²¹ Ibid., Sec. 3610.

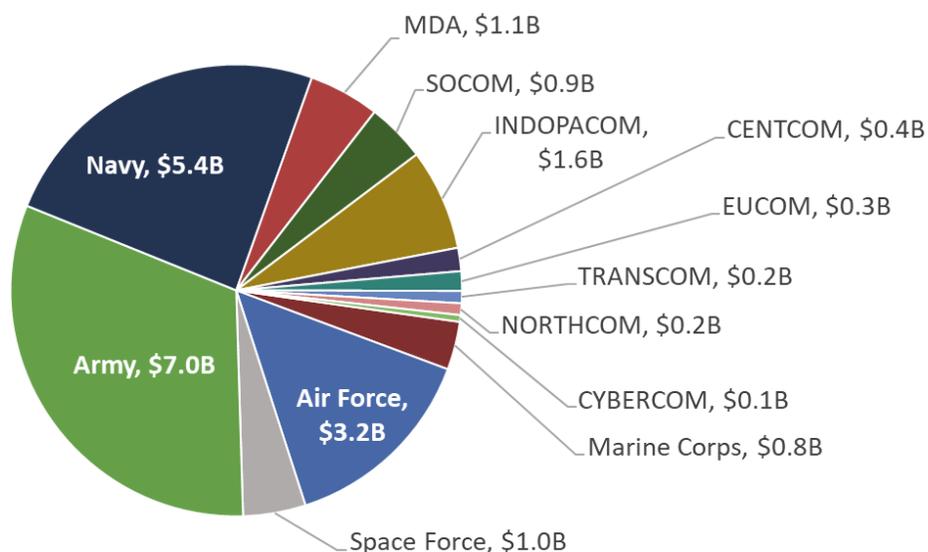
²² Mark Thompson, "Gates Takes Aim at the Military's Spending Wish Lists," *Time*, July 17, 2009, <http://content.time.com/time/nation/article/0,8599,1911152,00.html>.

²³ Todd Harrison, *Analysis of the FY 2015 Defense Budget* (Washington, DC: Center for Strategic and Budgetary Assessments, 2014), 11-12, <https://csbaonline.org/uploads/documents/ANALYSIS-OF-THE-FY-2015-DEFENSE-BUDGET.pdf>.

Defense Authorization Act (NDAA) enshrined the practice in law, mandating that each service chief and combatant commander submit their lists within 10 days of the budget submission.²⁴

In FY 2021, the unfunded priorities total more than \$22 billion. As shown in Figure 14, the Army requested the largest amount of unfunded priorities (\$7.0 billion), more than half of which is unrequested OCO funding to support ongoing operations in Iraq, Afghanistan, and other counterterrorism operations around the world.²⁵ Notably, the Space Force submits its first unfunded priorities list, which includes funding to accelerate several satellite communications programs, missile warning satellites, and the launch of two GPS satellites.²⁶

Figure 14: Unfunded Priority Submissions for FY 2021



²⁴ National Defense Authorization Act for Fiscal Year 2017, Public Law 114-328, Sec. 1064, <https://www.congress.gov/114/plaws/publ328/PLAW-114publ328.pdf>.

²⁵ James C. McConville, Letter to Congressional Committees, February 2020, https://insidedefense.com/sites/insidedefense.com/files/documents/2020/feb/02212020_army.pdf.

²⁶ "FY2021 Space Force Targeted UPL \$1.0B," United States Department of the Air Force, February 2020, https://insidedefense.com/sites/insidedefense.com/files/documents/2020/feb/02202020_ussf2.pdf.

2 | Army

Overall Trends

The Department of the Army requests a topline of \$177.9 billion in discretionary and mandatory funding for FY 2021. The request is 2.2 percent lower than the FY 2020 enacted level when adjusted for inflation and is \$3.7 billion, or 2.0 percent, lower than the projected topline for FY 2021 in PB20. Despite this small decrease in FY 2021, the projected topline in the outyears of the budget is largely consistent with the PB20 projections, as shown in Figure 15. The Army anticipates that the topline will fall almost 10 percent in real terms from FY 2021 to FY 2022 and remain largely flat through FY 2025, though in reality the decrease will not be as dramatic. Army O&M accounts will likely receive a significant portion of the OCO funding that is currently categorized as defense-wide O&M in FY 2022.

Figure 15: Department of the Army Budget Projected in PB20 versus PB21

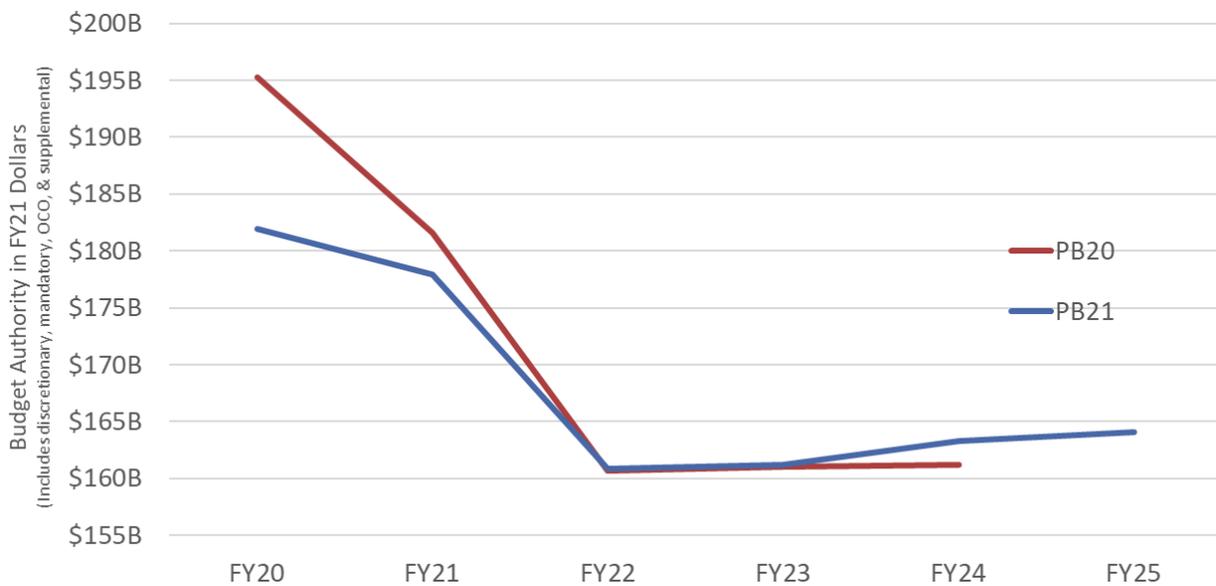
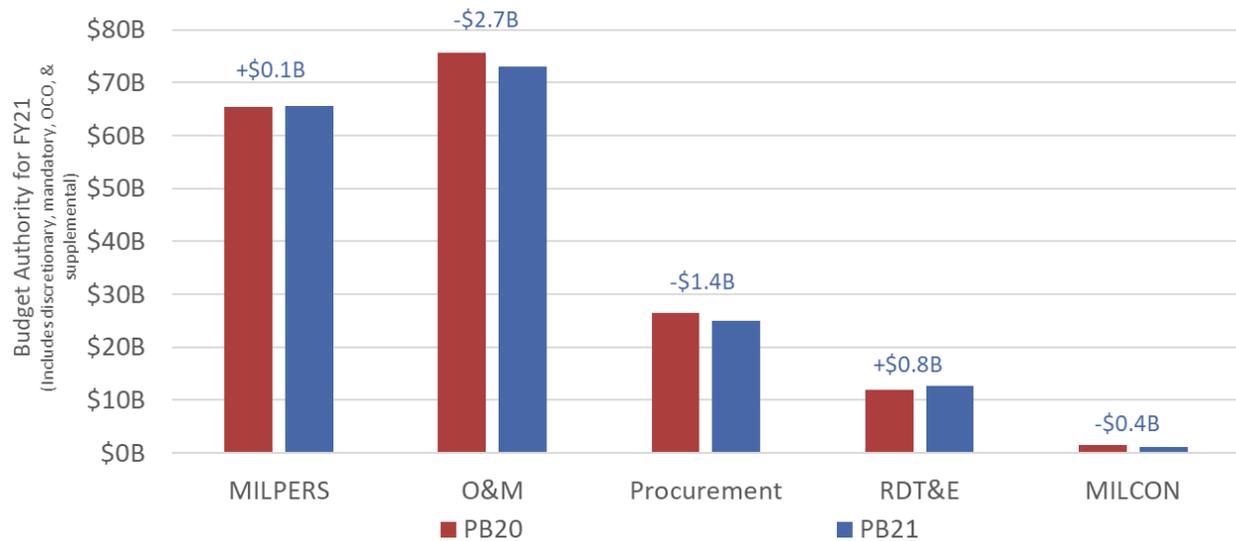


Figure 16 shows Army requested funding for FY 2021 by spending title relative to the projection in PB 2020. A \$2.7 billion decrease to O&M funding accounts for most of the difference between the requested level and last year’s estimates, while procurement is also \$1.4 billion less than what was projected. Army RDT&E programs only saw an increase of \$800 million, as most of DoD’s overall RDT&E boost went to the other services.

Figure 16: Department of the Army Funding for FY 2021 in PB20 versus PB21 by Title



Changes in Force Structure

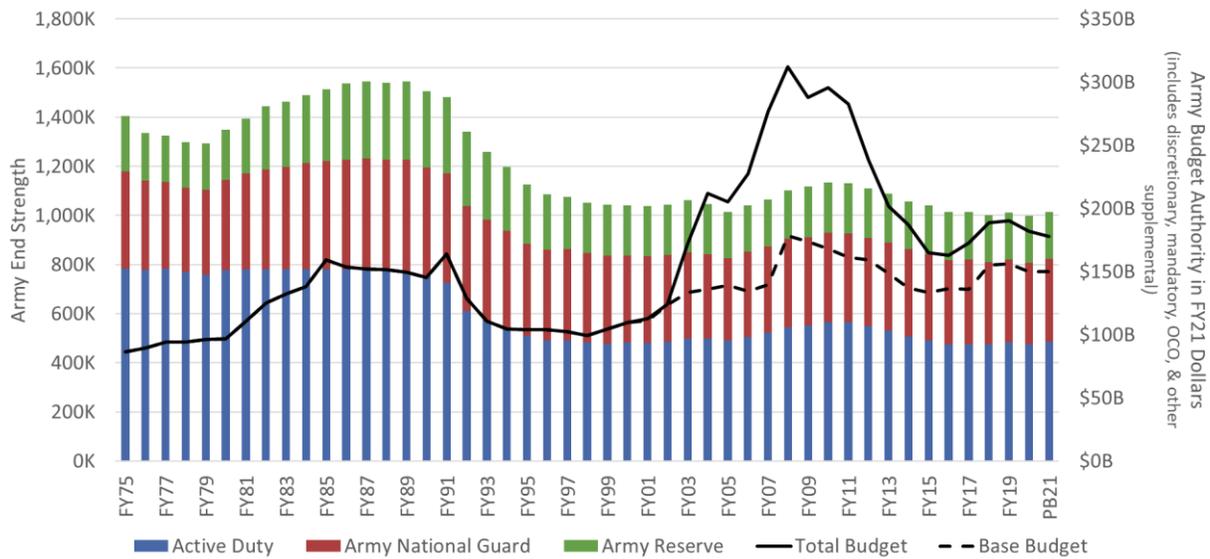
The Army’s MILPERS request for FY 2021 is slightly higher than what was projected in the administration’s FY 2020 request and represents a 2.5 percent increase over FY 2020 enacted levels. The budget supports an increase in the Army’s active duty end strength from the enacted level of 480,000 in FY 2020 to 485,900 (accounting for 100 personnel that would transfer to the Space Force in FY 2021). The National Guard and Army Reserve requested an increase in end strength of 500 and 800 personnel, respectively, bringing the Army’s total end strength to 1,012,200.²⁷

Since the drawdown of operations in Iraq and Afghanistan, Army total end strength has fallen considerably. Total end strength, including both the active and reserve components, decreased by almost 12 percent from its peak in FY 2010 to its trough in FY 2018, while the active duty force fell 15.9 percent over the same period. As Figure 17 shows, the Army budget also saw a significant decrease from its peak at the height of the wars in FY 2008. While this drop was expected given the large amount of OCO funding the Army received, the Army’s base budget also fell by 25.1 percent from FY 2008 to FY 2015 when adjusted for inflation.

In fact, the Army’s total end strength since 2016 has fallen below the post-Cold War trough in FY 2000 and is over a third smaller than the peak of the force in the late-1980s. Yet since 2018, the service’s base budget (excluding OCO) has nearly matched or exceeded Army funding levels at that height. This suggests that Army force structure has become increasingly expensive.

²⁷ Department of the Army, *Army Fiscal Year 2021 Budget Overview*, (Washington, DC: February 10, 2020), 8, https://www.asafm.army.mil/Portals/72/Documents/BudgetMaterial/2021/pbr/Overview%20and%20Highlights/Army_FY_2021_Budget_Overview.pdf.

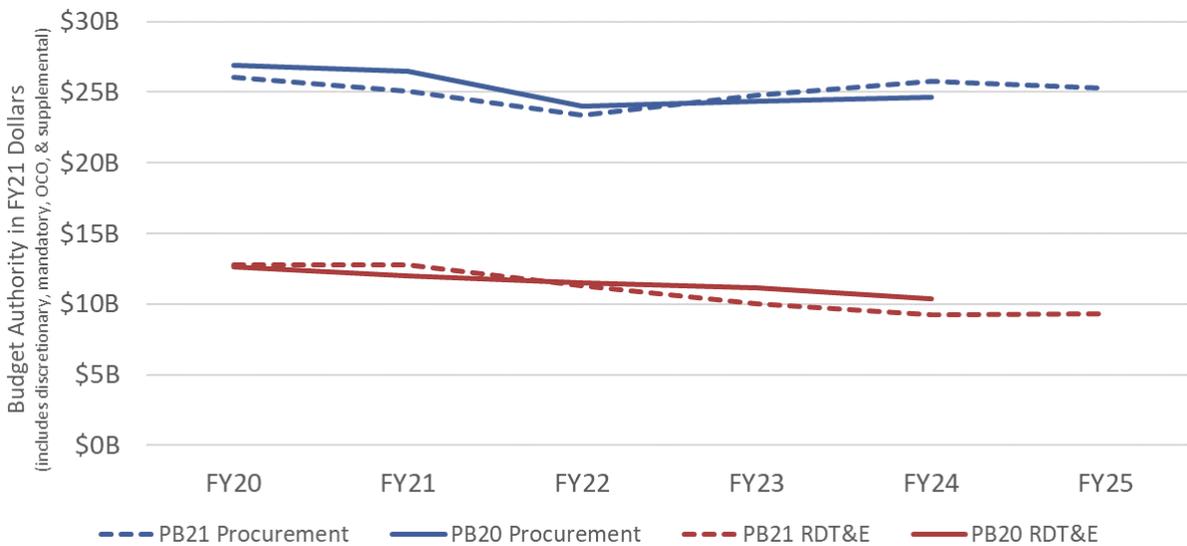
Figure 17: Army End Strength and Budget



Major Acquisition Programs

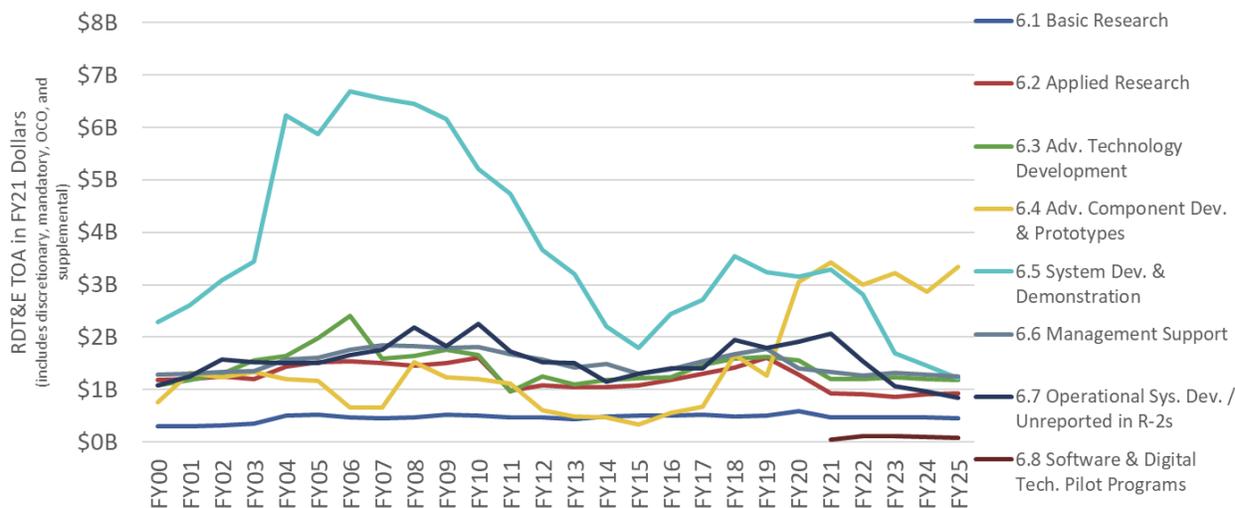
In its FY 2021 budget, the Army requests \$37.8 billion in funding for acquisition programs. Between FY 2021 and FY 2025, Army acquisition funding is projected to fall by 8.5 percent in real terms. This is primarily due to a significant reduction in RDT&E funding over the FYDP, as shown in Figure 18. The Army’s FY 2021 RDT&E request totals \$12.8 billion, but the service estimates that figure will fall by 27.0 percent by FY 2025 when adjusted for inflation.

Figure 18: Department of the Army Acquisition Funding Projected in PB20 versus PB21



The Army’s FY 2021 RDT&E request is dominated by funding for budget activities Advanced Component Development and Prototypes (6.4) and System Development and Demonstration (6.5), largely a continuation from the FY 2020 enacted budget. As shown in Figure 19, funding for budget activity 6.5 has largely mirrored the Army’s topline since FY 2000. Between FY 2000 and its peak in FY 2006, funding for RDT&E 6.5 programs grew 193.0 percent in real terms before falling 73.3 percent to its trough in FY 2015. The rise in 6.5 funding was largely driven by the Future Combat Systems program (spread across multiple program elements), that was ultimately cancelled in June 2009.²⁸ While 6.5 funding has somewhat recovered since FY 2015, it is projected to fall 63.2 percent (adjusted for inflation) over the course of the FYDP. This is due in part to the transition of programs from RDT&E to procurement, including the Optionally Manned Fighting Vehicle (OMFV) and the IFPC ground-based air and missile defense system.

Figure 19: Army RDT&E by Budget Activity



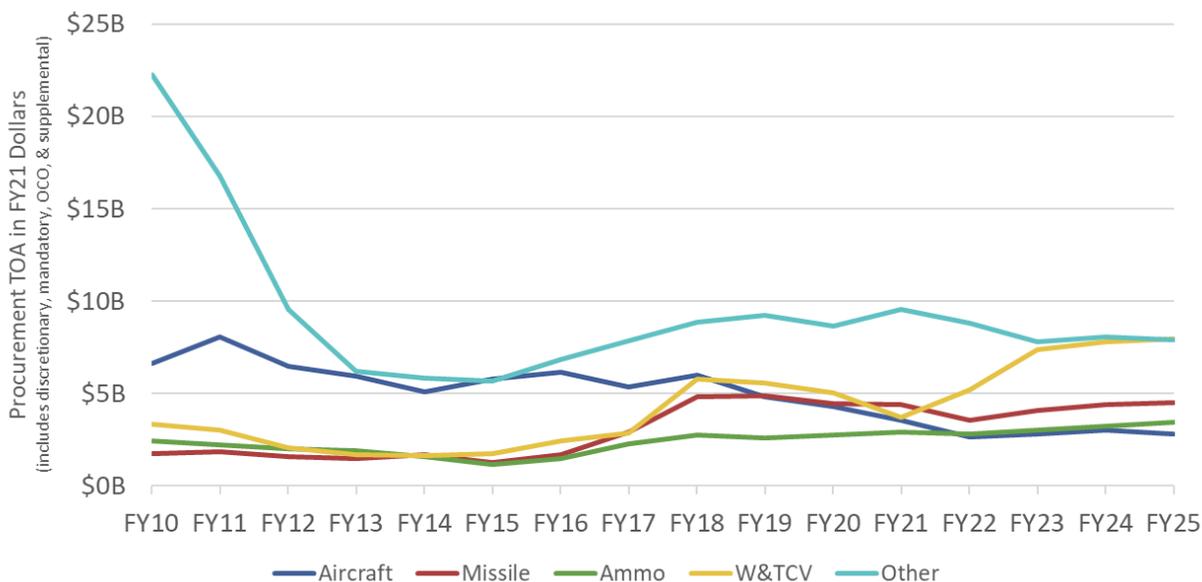
Funding for Advanced Component Development and Prototypes (6.4) has grown 141.4 percent in real terms from FY 2019 to FY 2020 and is projected to grow a further 12.4 percent in the FY 2021 request. This growth from FY 2020 to FY 2021 is driven by increased funding for the Army’s Emerging Technology Initiatives program element, which funds the service’s rapid prototyping as well as the OMFV. While 6.4 funding dips slightly in FY 2022 and FY 2024, it recovers to just 2.2 percent under the FY 2021 level by FY 2025 when adjusted for inflation.

The Army’s FY 2021 procurement request represents a 3.8 percent cut in real terms from FY 2020 levels and is projected to fall a further 6.9 percent from FY 2021 to FY 2022, as shown in Figure 18. Overall Army procurement funding in FY 2025 shows real growth of 1 percent above the requested level for FY 2021. Nearly 40 percent of the funding (\$9.5 billion) requested is for the Other Procurement appropriation account, with \$5.6 billion of that going toward communications and electronics equipment. As Figure 20 shows, the Other Procurement account has received the most funding for 10

²⁸ Christopher G. Pernin et al., *Lessons from the Army’s Future Combat Systems Program* (Santa Monica, CA: RAND Corporation, 2012), 44-45, 47-49, <https://www.rand.org/pubs/monographs/MG1206.html>.

of the past 11 years (aircraft procurement received a greater share in FY 2015). Over the course of the FYDP, however, its share of the procurement budget is expected to fall as funding for weapons and tracked combat vehicles (W&TCV) grows 98.4 percent in real terms over the same period.

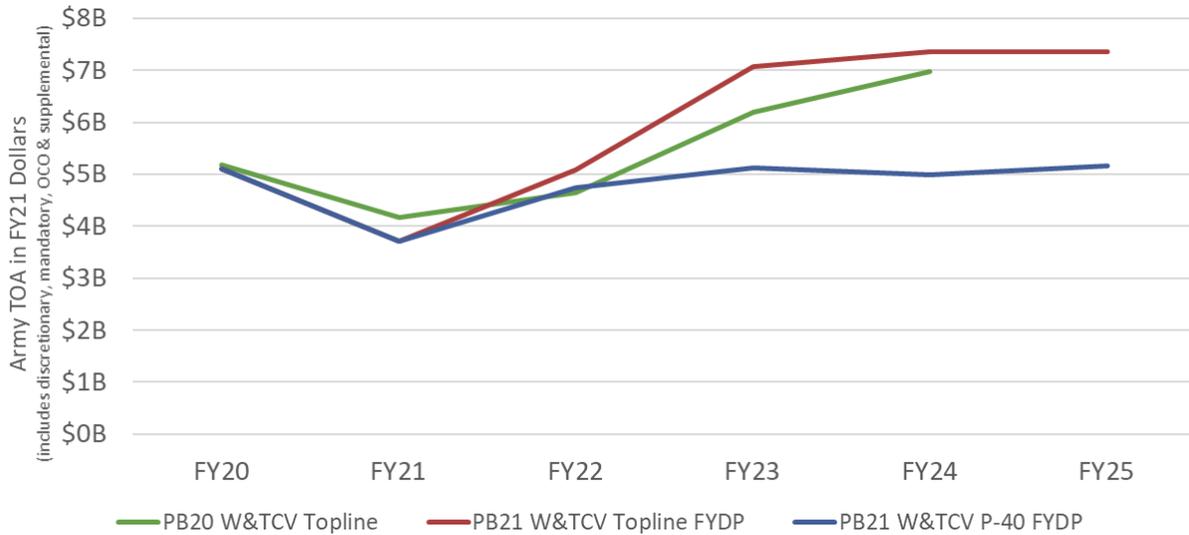
Figure 20: Army Procurement by Appropriation Account



As Figure 21 illustrates, procurement funding for the W&TCV account for FY 2021 is 10.9 percent lower in PB21 relative to the PB20 projected level. PB21 projections for W&TCV programs between FY 2022 and FY 2024 are higher than those in last year’s request. However, the programs driving the sustained growth over the FYDP are not immediately evident. Figure 21 compares funding for reported W&TCV procurement programs in the P-40 justification documents with the reported W&TCV topline. For each year between FY 2023 and FY 2025, there is a gap between the topline and reported programs of approximately \$2 billion. This would suggest that programs transitioning from RDT&E into procurement would account for the difference. However, there do not appear to be many major RDT&E investments moving into procurement in this timeline. For example, the Army’s OMFV currently in development is not scheduled to reach full-rate production until FY 2029 under the current plan.²⁹

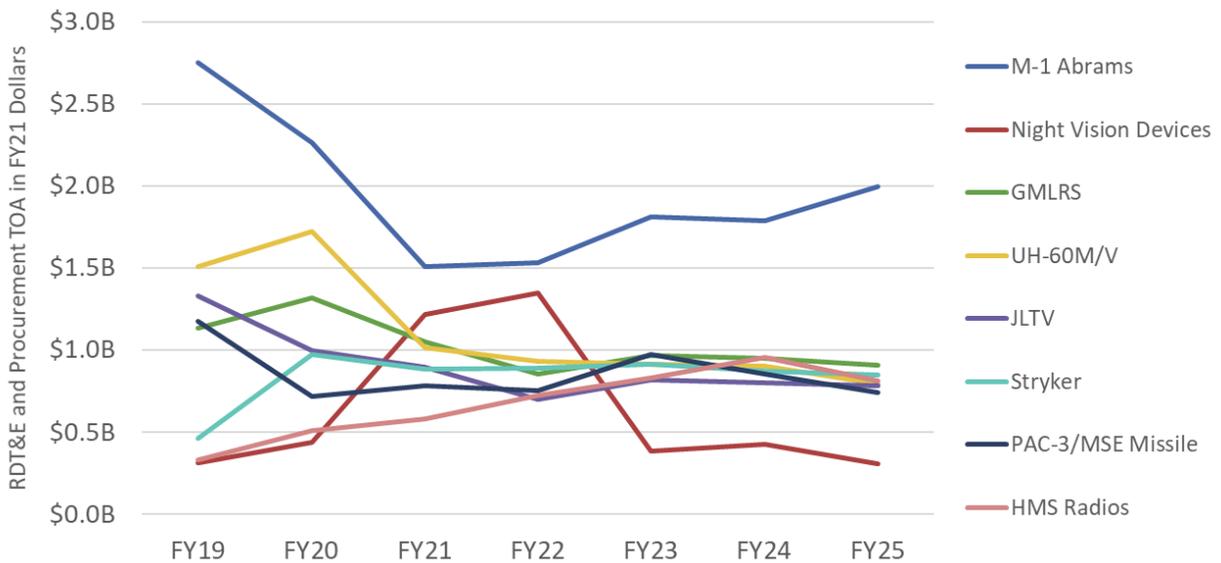
²⁹ Andrew Feickert, *The Army’s Optionally Manned Fighting Vehicle (OMFV) Program: Background and Issues for Congress*, CRS Report No. R45519 (Washington, DC: Congressional Research Service, July 2020), 9, <https://fas.org/sgp/crs/weapons/R45519.pdf#page=13>.

Figure 21: Comparison of W&TCV Procurement Account Topline versus P-40 Topline



The section below details the top Army acquisition programs in the FY 2021 budget request. Together, these eight programs, shown in Figure 22, consume nearly 21 percent (\$7.9 billion) of the Army’s acquisition budget in FY 2021 and 21 percent of the Army’s total acquisition funding over next five years (FY 2021 through FY 2025).

Figure 22: Army Major Acquisition Programs



M-1 Abrams Modifications/Upgrades

The largest acquisition program in the Army’s request is the program to modify and upgrade the fleet of M1A2 Abrams tanks. The Abrams tank first entered service in 1980, and recent efforts have included upgraded armor, an active protection system, a remotely operated weapon station, and upgrades

that improve reliability and fuel efficiency. Funding for this program declines sharply in FY 2021 due to a reduction in the number of M-1 upgrades, from 171 vehicles in FY 2020 to 89 vehicles in FY 2021. The pace of upgrades is expected to rebound somewhat over the next five years, growing to 113 vehicles per year in FY 2025.³⁰

Night Vision Devices

The second-largest acquisition over the next two years is a collection of night vision devices, including night vision goggles, laser target locator modules, monocular night vision devices, the Integrated Visual Augmentation System (IVAS) heads-up display, and multi-function laser illuminators. Funding is higher for the program in FY 2021 and FY 2022 because the Army projects that it will ramp production of IVAS heads-up displays from zero in FY 2020 to more than 40,000 units annually in FY 2021. In its budget justification, the Army notes that the acquisition strategy for IVAS “is to move seamlessly from rapid prototyping to rapid fielding upon completion of [development] and negotiating a follow-on production Other Transaction Agreement (OTA) award.”³¹

GMLRS

The Guided Multiple Launch Rocket System (GMLRS) is a family of surface-to-surface missiles that can be fired from both the High Mobility Artillery Rocket System (HIMARS) and Multiple Launch Rocket System (MLRS) launchers. The Army is developing an Extended Range (ER) version of GMLRS that will extend the systems range from 70 km to 150 km.³² GMLRS funding declines in the FY 2021 request due to a reduction in planned procurement quantities from 8,211 in FY 2020 to 6,288 in FY 2021 (904 of which are funded through OCO). Procurement quantities are projected to stay near this lower level through FY 2025.³³

UH-60M/V

The Army is in the process of modernizing its fleet of UH-60 helicopters by buying 1,375 of the newer UH-60M model and converting 760 older UH-60s to the UH-60V configuration. In the FY 2021 budget,

³⁰ U.S. Department of the Army, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book of Procurement of W&TCV, Army*, (Washington, DC: February 2020), 130-131, https://www.asafm.army.mil/Portals/72/Documents/BudgetMaterial/2021/Base%20Budget/Procurement/WTCV_FY_2021_P_B_Procurement_of_Weapons_and_Tracked_Combat_Vehicles.pdf.

³¹ U.S. Department of the Army, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book of Other Procurement, Army, Communications and Electronics Equipment, Budget Activity 2* (Washington, DC: February 2020), 368, https://www.asafm.army.mil/Portals/72/Documents/BudgetMaterial/2021/Base%20Budget/Procurement/OPA_BA_2_FY2021_PB_Other_Procurement_BA2_Communications_and_Electronics.pdf.

³² “Lockheed Martin Awarded \$1.14 Billion for GMLRS Rockets,” DEFPOST, February 28, 2020, <https://defpost.com/lockheed-martin-awarded-1-14-billion-for-gmlrs-rockets/>.

³³ U.S. Department of the Army, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book of Missile Procurement, Army* (Washington, DC: February 2020), 91, https://www.asafm.army.mil/Portals/72/Documents/BudgetMaterial/2021/Base%20Budget/Procurement/MSLS_FY_2021_P_B_Missile_Procurement_Army.pdf.

the Army requests 36 UH-60Ms and 24 UH-60V conversion kits.³⁴ Conversions to the UH-60V are projected to be completed in FY 2025, while procurements of the UH-60M are expected to continue through the late-2020s.

JLTV

The Joint Light Tactical Vehicle (JLTV) is a light tactical vehicle intended to replace the High Mobility Multipurpose Wheeled Vehicle (HMMWV). The JLTV program is an Army-led joint acquisition with the Navy, Marine Corps, and Air Force. The Army plans to buy a total of more than 49,000 vehicles of various configurations over the life of the program. The FY 2021 request includes funding for 3,254 vehicles in FY 2021 and a total of 15,071 over the FYDP.³⁵

Stryker Upgrades

The Stryker platform is a 19-ton wheeled armored vehicle that supports a variety of functions, ranging from carrying infantry to conducting reconnaissance and medical evacuation. The Stryker Upgrade program is in the process of converting the remaining flat-bottom hull vehicles to the more survivable double v-hull as well as modernizing other systems on the vehicle. The FY 2021 request funds 154 vehicle upgrades, and the FYDP projects that upgrades will decline slightly to 148 annually in FY 2022 and FY 2023 and 142 in FY 2024 and FY 2025.³⁶

PAC-3/MSE Missile

The Patriot Advanced Capability (PAC-3) Missile Segment Enhancement (MSE) program provides a more capable interceptor missile for the Patriot air and missile defense system. The FY 2021 request supports the procurement of 168 MSE missiles, 32 launcher modification kits, and other training and support equipment.³⁷ The FYDP does not include projected quantities of missiles for FY 2022 and beyond, but overall funding is expected to rise through FY 2023 and return to roughly the current level by FY 2025.

³⁴ U.S. Department of the Army, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book of Aircraft Procurement, Army* (Washington, DC: February 2020), 46, 59, https://www.asafm.army.mil/Portals/72/Documents/BudgetMaterial/2021/Base%20Budget/Procurement/ACFT_FY_2021_P_B_Aircraft_Procurement_Army.pdf.

³⁵ U.S. Department of the Army, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book of Other Procurement, Army, Tactical and Support Vehicles, Budget Activity 1* (Washington, DC: February 2020), 51, https://www.asafm.army.mil/Portals/72/Documents/BudgetMaterial/2021/Base%20Budget/Procurement/OPA_BA_1_FY_2021_PB_Other_Procurement_BA1_Tactical_and_Support_Vehicles.pdf.

³⁶ U.S. Department of the Army, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book of Procurement of W&TCV, Army* (Washington, DC: February 2020), 12, https://www.asafm.army.mil/Portals/72/Documents/BudgetMaterial/2021/Base%20Budget/Procurement/WTCV_FY_2021_P_B_Procurement_of_Weapons_and_Tracked_Combat_Vehicles.pdf.

³⁷ U.S. Department of the Army, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book of Missile Procurement, Army* (Washington, DC: February 2020), 13, https://www.asafm.army.mil/Portals/72/Documents/BudgetMaterial/2021/Base%20Budget/Procurement/MSLS_FY_2021_P_B_Missile_Procurement_Army.pdf.

HMS Radios

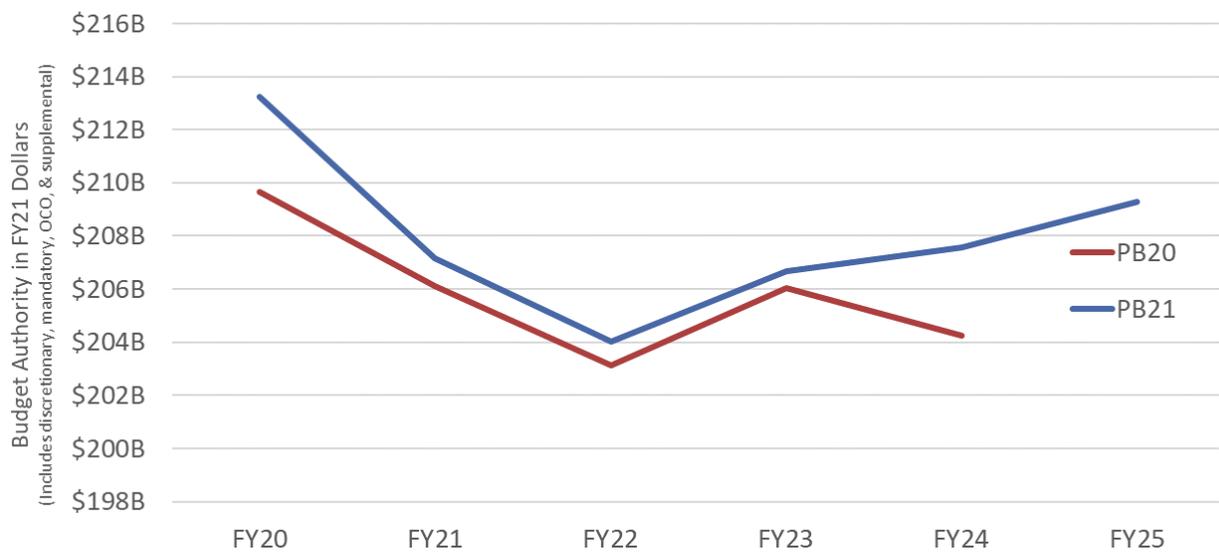
The Handheld, Manpack, and Small Form Fit (HMS) program is procuring a family of software reprogrammable radios for tactical voice and data communications. The budget funds the move to full-rate production for both the Leader Radio and Manpack versions of the radio in FY 2021. The current Army acquisition objective includes: 100,000 Leader Radios; 65,622 Manpack Radios; 21,579 Rifleman Radios; and 104,496 Single Channel Data Radios. The FY 2021 budget procures 4,510 Leader Radios and 4,678 Manpack Radios. The FYDP does not include quantities for future years, but it projects that funding for the HMS program will nearly double by FY 2024.

3 | Navy and Marine Corps

Overall Trends

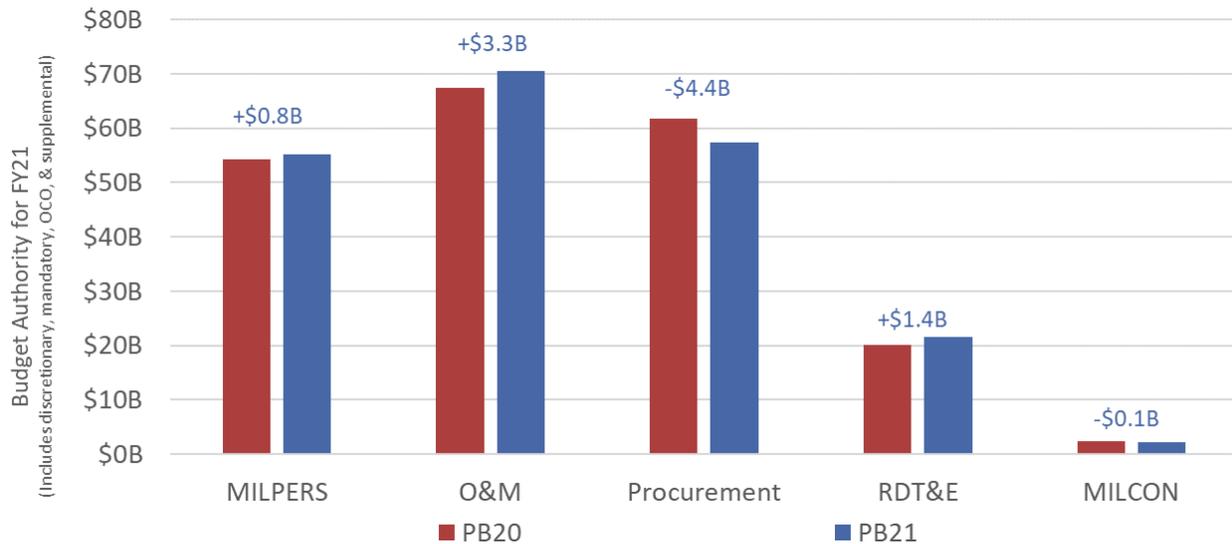
For FY 2021, the Department of the Navy is requesting a topline of \$207.1 billion in discretionary and mandatory budget authority. While the request is slightly higher (under 1 percent) than the projected topline for FY 2021 projected in PB20, it represents a 2.8 percent drop in real terms from the enacted FY 2020 level. As Figure 23 shows, this decline is projected to continue into FY 2022, falling by a further 1.5 percent before rebounding 2.6 percent by FY 2025 when adjusted for inflation.

Figure 23: Department of the Navy Budget Projected in PB20 versus PB21



Funding for O&M accounts was the notable winner in the Navy’s FY 2021 request relative to what was projected in PB20. Figure 24 compares PB21 by spending title with the estimates for FY 2021 in PB20. O&M funding is \$3.3 billion higher in this year’s request, while RDT&E accounts receive \$1.4 billion more than last year’s projection. Of the three military departments, the Navy’s procurement programs took the biggest cut in PB21, at \$4.4 billion below the estimate for the same year in PB20. The Major Acquisition Programs section in this chapter accounts for the major drivers of those cuts.

Figure 24: Department of the Navy Funding for FY 2021 in PB20 versus PB21 by Title



Changes in Force Structure

The enacted Navy budget (including mandatory and discretionary funding) in FY 2020 is the highest for the department since FY 1948 when adjusted for inflation. As shown in Figure 25, the FY 2020 level of funding is fractionally higher than previous peaks in FY 2010 and FY 1985.³⁸ But while the budget reached an historic high in FY 2020, the current fleet of 300 ships is roughly half the size of the fleet in FY 1985 (according to both the active ship and battle force ship counting methods). The ship count peaked in FY 1987 at 594 active ships (568 battle force ships) before falling to a post-Cold War trough of 271 ships in FY 2015. Assessed at the macro level, this indicates that maintaining force structure is increasingly expensive for the Navy as it tries to increase the size of the fleet.

While the Navy did not submit its annual 30-year shipbuilding plan with the FY 2021 budget request as mandated in law, it does include its shipbuilding plan over the FYDP.³⁹ Between FY 2021 and FY 2025, the request calls for 10 fewer ships in total compared to the estimates in the FY 2020 budget. Figure 26 compares the planned procurement of ships in the FY 2021 and FY 2020 budget requests. Cuts to the planned procurement of large surface combatants account for half of the reductions, with 4 fewer

³⁸ Figure 25 data from FY 1975 to FY 1999 reflects the number of active ships in the fleet than the total number of battle force ships. Data from FY 2000 onwards reflects the number of battle force ships confirmed by Table H-1 in [CRS Report RL32665](#) (with the exception of FY 2004). Both counting methods are used due to the availability of data by ship type from the [Naval History and Heritage Command](#). Data from FY 2017 to FY 2020 was compiled from the [Naval Vessel Register](#).

³⁹ The annual long-range shipbuilding plan is mandated under 10 U.S. Code § 231. The delay in the release of the FY 2021 plan stems from the delay in the release of the Integrated Naval Force Structure Assessment (INFSA) jointly developed by the Navy and Marine Corps. The Office of the Secretary of Defense has launched a review of the assessment, led by the deputy secretary of defense, over its alignment with the NDS. See, Megan Eckstein, “Pentagon Leaders Have Taken Lead in Crafting Future Fleet from Navy,” USNI News, June 24, 2020, <https://news.usni.org/2020/06/24/pentagon-leaders-have-taken-lead-in-crafting-future-fleet-from-navy>.

DDG-51 destroyers planned relative to FY 2020 projections as well as a planned future large surface combatant.

Figure 25: Historical Trends in Navy Force Structure and Budget

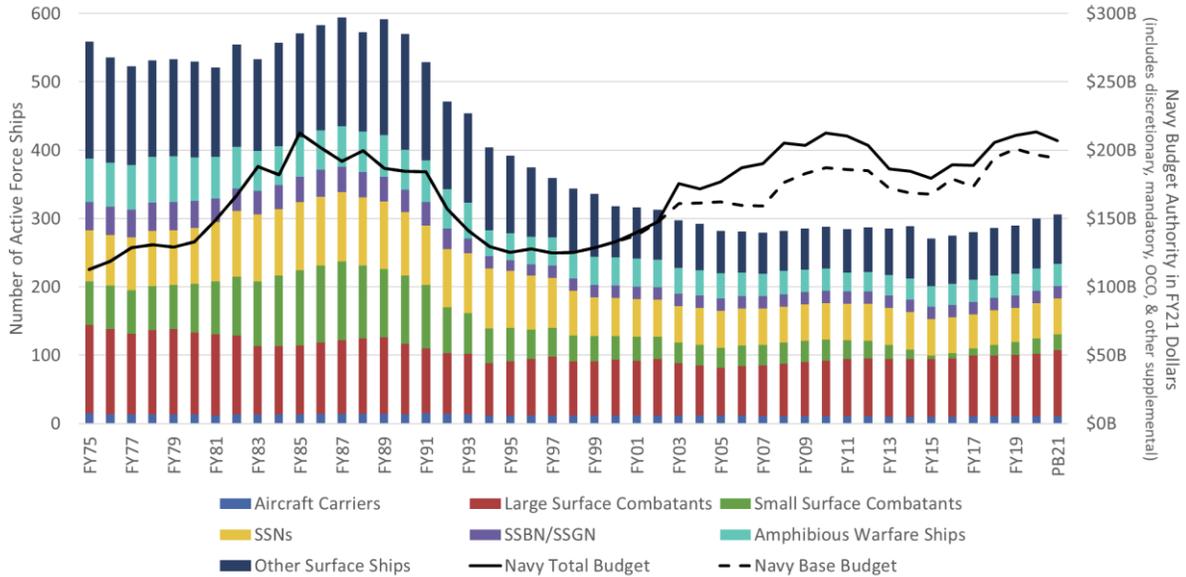
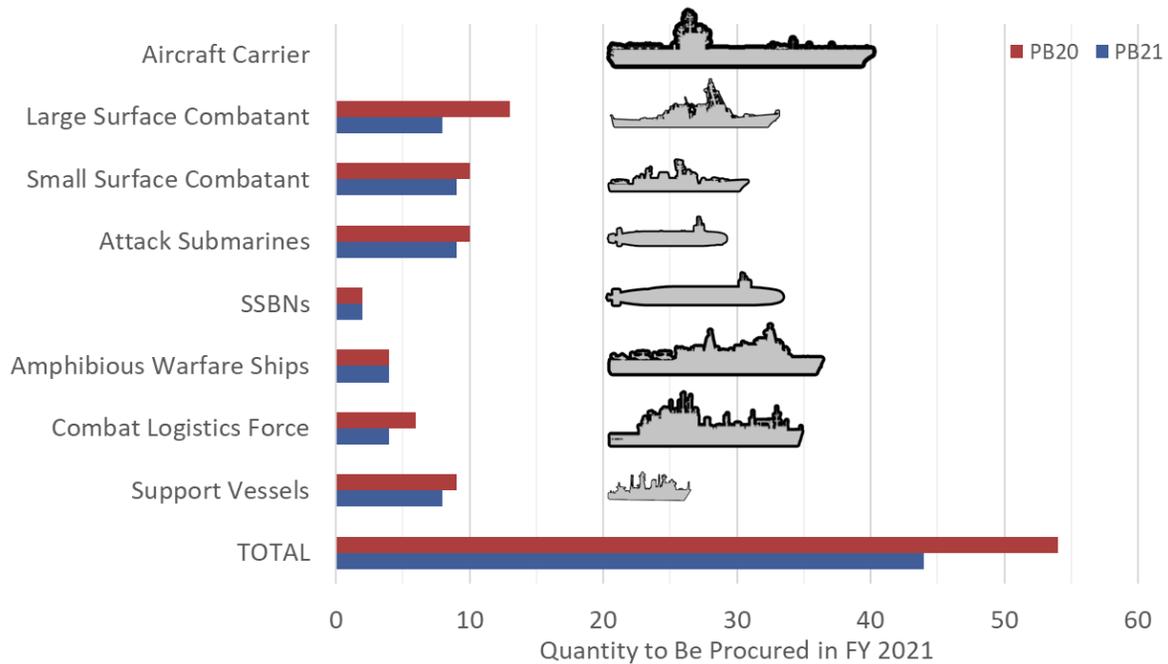


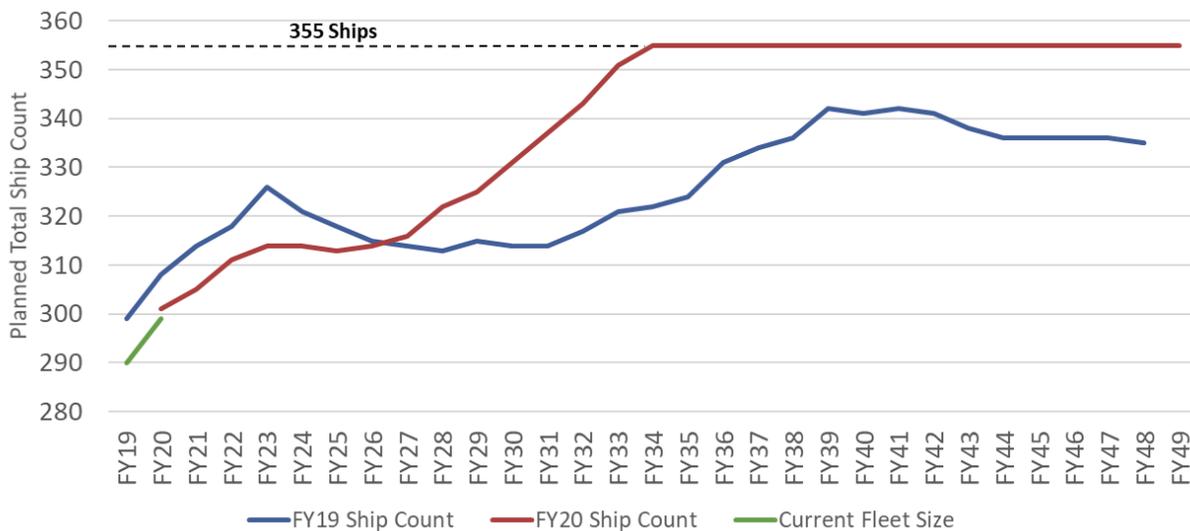
Figure 26: Comparison of FY 2021 – FY 2025 Shipbuilding Plan in PB20 and PB21



The reduction in planned battle force ship procurements poses questions on the feasibility of achieving a 355-ship fleet in the next 30 years. The 355-ship goal was established by the Navy’s 2016 Force Structure Assessment (FSA), mandated by the FY 2018 NDAA, and prioritized by the Trump

administration.⁴⁰ The FY 2020 shipbuilding plan projected the fleet would reach 355 ships by FY 2034; however, this was based on an April 2018 decision to extend the service life of each DDG to 45 years—roughly a 5 to 10-year extension.⁴¹ However, Navy officials announced it had cancelled the planned service life extension in March 2020 due to concerns over the policy’s cost-effectiveness.⁴² The FY 2019 shipbuilding plan, which was created prior to the decision to extend DDG service lives, did not anticipate reaching 355 ships in its 30-year time frame, instead peaking at 342 ships in FY 2039 and FY 2041. Figure 27 compares the FY 2019 and FY 2020 shipbuilding plans. The reduction in the FY 2021 shipbuilding plan over the FYDP together with the cancellation of the DDG service life extension and external downward pressures on the overall defense budget make it highly unlikely that the Navy can achieve a 355-battle force ship fleet in the next 30 years.

Figure 27: Comparison of Ship Count in FY 2019 and FY 2020 Shipbuilding Plans



Including uncrewed vessels in the ship count could move the Navy closer to achieving its 355-ship fleet. Under the current guidance, uncrewed vessels are not considered battle force ships and do not count to the overall size of the fleet.⁴³ The Navy currently funds multiple programs for Unmanned Surface Vessels (USVs) and Unmanned Underwater Vehicles (UUVs). It plans to procure two Large USV (LUSV) prototypes in FY 2021 (in RDT&E funding) and eight more over the course of the FYDP as the

⁴⁰ For a detailed discussion of the 355-ship goal, see Ronald O’Rourke, *Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress*, CRS Report No. RL32665, (Washington, DC: Congressional Research Service, August 2020), <https://fas.org/sgp/crs/weapons/RL32665.pdf>.

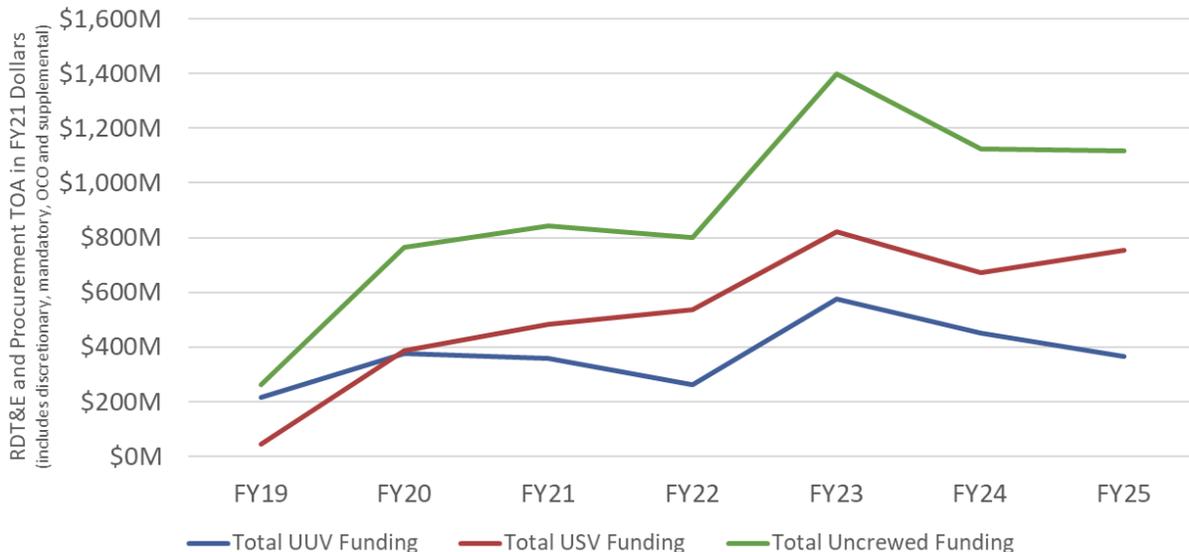
⁴¹ Megan Eckstein, “Navy Will Extend All DDGs to a 45-Year Service Life; ‘No Destroyer Left Behind’ Officials Say,” USNI News, April 12, 2018, <https://news.usni.org/2018/04/12/navy-will-extend-ddgs-45-year-service-life-no-destroyer-left-behind-officials-say>.

⁴² David Larter, “Destroyers left behind: US Navy cancels plans to extend service lives of its workhorse DDGs,” Defense News, March 7, 2020, <https://www.defensenews.com/naval/2020/03/07/destroyers-left-behind-us-navy-cancels-plans-to-extend-service-lives-of-its-workhorse-ddgs/>.

⁴³ “SECNAV Instruction 5030.8C,” Department of the Navy, June 14, 2016, <https://www.nvr.navy.mil/5030.8C.pdf>.

program transitions to procurement funding in FY 2023.⁴⁴ In FY 2021, the Navy is requesting approximately \$842 million in acquisition funding (both RDT&E and procurement) for uncrewed vessel programs, with approximately \$359 million for UUV programs and \$549 million for USV programs. Funding for uncrewed vessels is expected to peak in FY 2023 at almost \$1.4 billion (in FY 2021 dollars).

Figure 28: Navy Acquisition Funding for Uncrewed Vessels in PB21



Major Acquisition Programs

The Navy’s procurement request in PB21 is 8.8 percent lower than the FY 2020 enacted level when adjusted for inflation and \$4.4 billion, or 7.2 percent, lower than the projected level of funding for FY 2021 in PB20. Shipbuilding and Conversion programs, which account for almost 35 percent of the Navy’s procurement request in FY 2021, bore the brunt of the procurement reduction. The \$19.9 billion request for FY 2021 is 17.9 percent lower than the enacted FY 2020 funding level and \$3.6 billion less than what was anticipated for FY 2021 in the FY 2020 request.

The Navy shipbuilding request in PB21 calls for the procurement of 7 battle force ships rather than the 10 vessels anticipated for FY 2021 in the PB20 shipbuilding plan. (The Navy is officially requesting 8 ships in its budget documents, but it includes an LPD-17 amphibious warfare ship procured by Congress in FY 2020.)⁴⁵ Planned procurements cut in the FY 2021 request relative to the projections in the FY 2020 budget include one SSN-774 Virginia-class attack submarine; one FFG(X) frigate; and one T-AO-205 class replenishment oiler (an additional T-ATS-6 class towing, salvage, and rescue ship was requested as well). The reduction in the shipbuilding request was declared “dead on arrival” by the

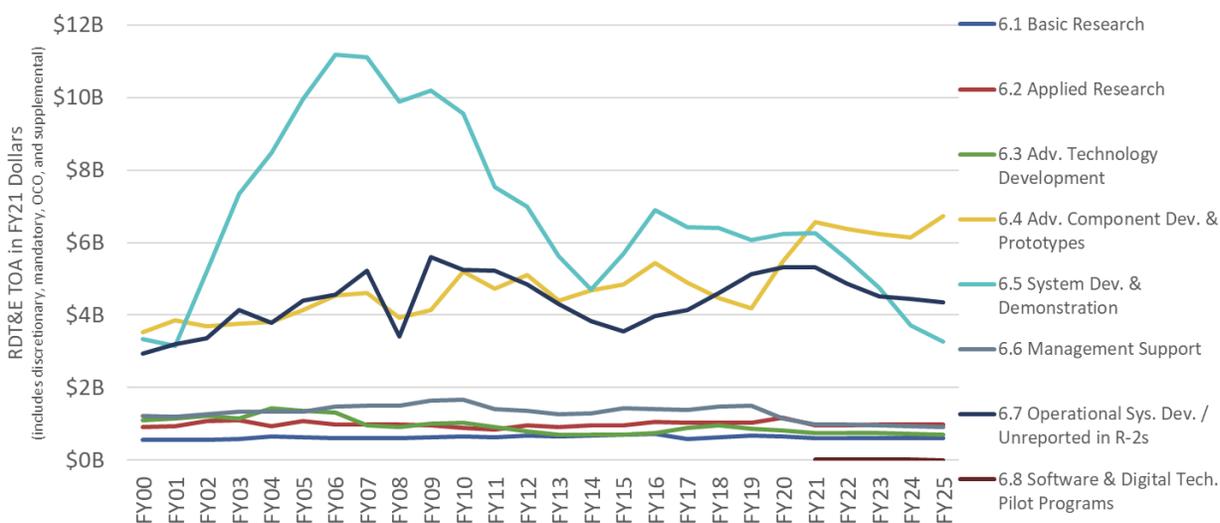
⁴⁴ U.S. Department of the Navy, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book of Research, Development, Test & Evaluation, Navy, Vol. 2 of 5* (Washington, DC: February 2020), 92, https://www.secnav.navy.mil/fmc/fmb/Documents/21pres/RDTEN_BA4_Book.pdf#page=92.

⁴⁵ Ronald O’Rourke, *Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress*, 1.

chair of the House Armed Services Subcommittee on Seapower and Projection Forces, indicating that Congress is likely to restore funding for some of the ships that were cut.⁴⁶ The decision to cut a Virginia-class submarine, in particular, drew ire from Congress.⁴⁷

The Navy is requesting \$21.5 billion in RDT&E for FY 2021, 3.8 percent higher than the enacted FY 2020 level of funding when adjusted for inflation and \$1.4 billion more than what was projected in PB20. Of the FY 2021 RDT&E request, Advanced Component Development and Prototypes (budget activity 6.4), System Development and Demonstration (6.5), and Operational Systems Development (6.7) together account for 84 percent of funding. As Figure 29 shows, those three budget activities have dominated the Navy’s RDT&E funding for the past 20 years. Budget activity 6.5 has received the most funding of any budget activity since FY 2002. From FY 2001 to its peak in FY 2006, 6.5 funding grew over 250 percent in real terms, driven in no small part by the growth of the F-35 program, the P-8 Poseidon, and the VHXX Executive Helo Development program to replace the presidential helicopter fleet (the VH-71 program that won the bid process would later be terminated).⁴⁸ Between FY 2021 and FY 2025, funding for budget activity 6.5 is projected to fall by almost 50 percent in real terms.

Figure 29: Navy RDT&E by Budget Activity



Funding for budget activity 6.4 has grown significantly since FY 2019 (30.5 percent in real terms from FY 2019 to FY 2020) and is projected to overtake 6.5 funding in the FY 2021 request. The growth in this budget activity stems from increased funding for hypersonic weapons development, the Medium and

⁴⁶ Megan Eckstein, “Navy’s New Shipbuilding Plan ‘Dead on Arrival,’ Lawmakers Say,” USNI News, February 10, 2020, <https://news.usni.org/2020/02/10/navys-new-shipbuilding-plan-dead-on-arrival-lawmakers-say>.

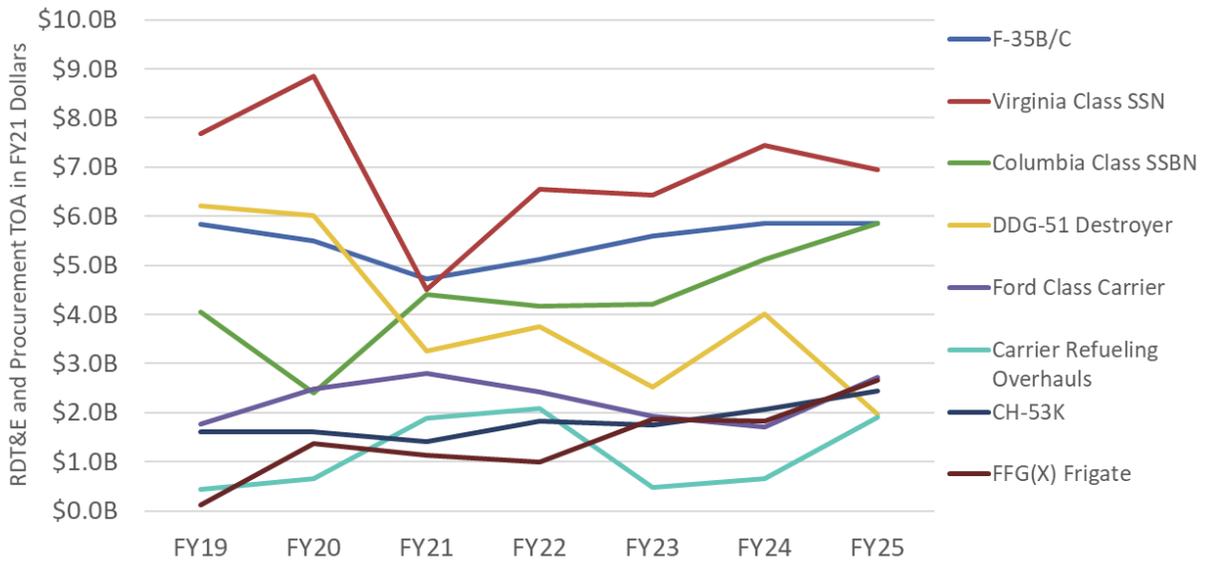
⁴⁷ Connie Lee, “Congress Pushes Back on Virginia-Class Submarine Cut,” USNI News, March 19, 2020, <https://www.nationaldefensemagazine.org/articles/2020/3/19/copy-of-congress-pushes-back-on-virginia-class-submarine-cut>.

⁴⁸ Ronald O’Rourke, *VH-71 Presidential Helicopter Program: Background and Issues for Congress*, CRS Report No. RS22103 (Washington, DC: Congressional Research Service, June 2009), <https://fas.org/sgp/crs/misc/RS22103.pdf>.

Large USV program, and several classified programs. Between FY 2021 and FY 2025, budget activity 6.4 is projected to see 3 percent real growth.

The section below details the top Navy and Marine Corps acquisition programs in the FY 2021 budget request. Together, these eight programs, shown in Figure 30, consume nearly 31 percent (\$24 billion) of the Navy and Marine Corps’ acquisition budget in FY 2021 and 34 percent of the its total acquisition funding over next five years (FY 2021 through FY 2025).

Figure 30: Major Navy Acquisition Programs



F-35B/C

The PB21 budget requests 21 F-35Cs (the carrier variant for the Navy) and 10 F-35Bs (the short takeoff and vertical landing variant for the Marine Corps).⁴⁹ This is a net increase compared to last year’s budget, which projected that 18 F-35Cs and 15 F-35Bs would be procured in FY 2021.⁵⁰ The PB21 FYDP projects that the procurement rate will gradually increase to 28 F-35Cs and 20 F-35Bs per year. In last year’s budget process, Congress appropriated money for six more F-35Bs than the Navy requested for FY 2020, and Congress could add more aircraft than requested this year as well.

Virginia-class SSN

The Virginia-class attack submarine program sees one of the largest reductions in the Navy’s budget for FY 2021 because the Navy revised its plans to buy one submarine instead of the two that had previously been planned. However, the FYDP projects that the Navy will return to buying two Virginia-

⁴⁹ U.S. Department of the Navy, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book Volume 1 of 3 Aircraft Procurement, Navy Budget Activities 01–04* (Washington, DC: February 2020), 15, 31, https://www.secnav.navy.mil/fmc/fmb/Documents/21pres/APN_BA1-4_BOOK.pdf.

⁵⁰ U.S. Department of the Navy, *Department of Defense Fiscal Year (FY) 2020 Budget Estimates: Justification Book Volume 1 of 3 Aircraft Procurement, Navy Budget Activities 01–04* (Washington, DC: March 2019), 15, 31, https://www.secnav.navy.mil/fmc/fmb/Documents/20pres/APN_BA1-4_BOOK.pdf.

class submarines per year in FY 2022 and beyond, making it the largest single program over the FYDP. Since FY 2019, all Virginia-class boats have included the Virginia Payload Module—an extended hull that can carry an additional 28 Tomahawk cruise missiles or other payloads.⁵¹

Columbia-class SSBN

The Columbia-class ballistic missile submarine is the planned replacement for the existing fleet of Ohio-class submarines that form the undersea leg of the nuclear triad. While FY 2020 included advance procurement funding for the program, FY 2021 is the first year of incremental full funding to procure the lead boat of this class, SSN 826, which will be delivered in FY 2028. A total of 12 boats are planned, with procurement reaching a maximum rate of one per year in the late-2020s.⁵²

DDG-51 Destroyer

The DDG-51 Arleigh Burke-class Destroyer has been in production since the 1980s. The FY 2021 request funds two Flight III ships as part of a multiyear procurement that includes a total of 10 ships from FY 2018 through FY 2022, with options for additional ships. While the budget does not reduce the planned number of DDG-51s in FY 2021 or FY 2022, the FYDP projects that the Navy will buy two fewer ships in FY 2023, one less in FY 2024, and one less in FY 2025 than previously planned and that production will be extended to at least FY 2026.⁵³

Ford-class Carrier

The Navy is in the process of buying the third and fourth ships (CVN 80 and CVN 81) of the Ford-class aircraft carrier under a two-ship contract intended to reduce costs. CVN 80 is expected to be delivered in FY 2028, and CVN 81 is expected in FY 2032. As a result of the two-ship procurement underway and the long construct, the Navy does not project another Ford-class carrier will be procured within the FYDP.⁵⁴

Carrier Refueling Overhauls

While the Navy is buying new aircraft carriers through the Ford-class program, it is simultaneously funding mid-life refueling and overhaul for existing carriers. This program supports the ongoing refueling and overhaul of the USS George Washington (CVN 73) and the USS John C. Stennis (CVN 74), which are expected to be completed in FY 2022 and FY 2025, respectively. PB21 includes advance procurement funding over the FYDP for the refueling and overhaul of the USS Harry S. Truman (CVN 75) that is expected to be requested for incremental full funding in FY 2025.⁵⁵

⁵¹ U.S. Department of the Navy, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book Volume 1 of 1, Shipbuilding and Conversion, Navy* (Washington, DC: February 2020), 93, https://www.secnav.navy.mil/fmc/fmb/Documents/21pres/SCN_Book.pdf.

⁵² *Ibid.*, 1.

⁵³ *Ibid.*, 175.

⁵⁴ *Ibid.*, 31, 32, 63, 64.

⁵⁵ *Ibid.*, 111-113.

CH-53K

The CH-53K is a marinized heavy-lift helicopter for the Marine Corps that replaces the aging and accident-prone CH-53E. According to budget documents, the existing fleet of CH-53Es “has developed performance degradation, fatigue life, interoperability, maintenance supportability, and other operational concerns.” PB21 funds the procurement of 7 aircraft in FY 2021 and projects that production will increase to 23 per year by FY 2025. The Marine Corps plans to buy a total of 200 CH-53Ks.⁵⁶

FFG(X) Frigate

The FFG(X) is a guided-missile frigate designed to be more lethal and survivable than the Littoral Combat Ship (LCS) it displaced in the Navy’s portfolio of acquisitions. Congress appropriated funding for the first ship of this class in FY 2020, and the Navy awarded the contract in April 2020 to Marinette Marine Corporation, one of the suppliers of the LCS. This contract includes options for up to 10 ships, and the Navy expects to procure a total of 20 ships. The request includes funding for one ship in FY 2021 and a total of eight additional ships in FY 2022 through FY 2025. The first ship is expected to enter the fleet in FY 2027.⁵⁷

Marine Corps Budget

Just as the Marine Corps falls under the Department of the Navy structurally, the Marine Corps’ budget constitutes part of the Navy’s budget. Funding for the Marine Corps falls into two categories: “green” dollars that are “unilaterally program[ed]” by the service itself and “blue-in-support-of-green” dollars that are “programmed jointly” by the Navy and the Marine Corps.⁵⁸ Green funding includes: MILPERS and O&M accounts for both the active duty and reserve components of the Marines; the “Procurement, Marine Corps” account for Marine Corps-specific procurements; and the Marine Corps’ portions of MILCON and family housing funds. Blue-in-support-of-green dollars fund procurement programs for aviation and ammunition that do not fall under the Procurement, Marine Corps account and RDT&E funding for Marine Corps programs, among other areas.⁵⁹

Figure 31 shows the breakdown of the Department of the Navy budget between green funding, blue-in-support-of-green funding, and blue (Navy) funding. The reported total Marine Corps request for FY 2021 is \$46.0 billion, a nearly 5 percent decrease in real terms from last year’s enacted level of funding. Approximately 64 percent, or \$29.3 billion, of the Marine Corps’ budget is green funding. The request for the Procurement, Marine Corps account is \$3.0 billion, down 3.3 percent from the enacted FY 2020 level when adjusted for inflation and 13.5 percent below what was projected for FY 2021 in PB20. The

⁵⁶ U.S. Department of the Navy, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book Volume 1 of 3 Aircraft Procurement, Navy Budget Activities 01–04*, 45.

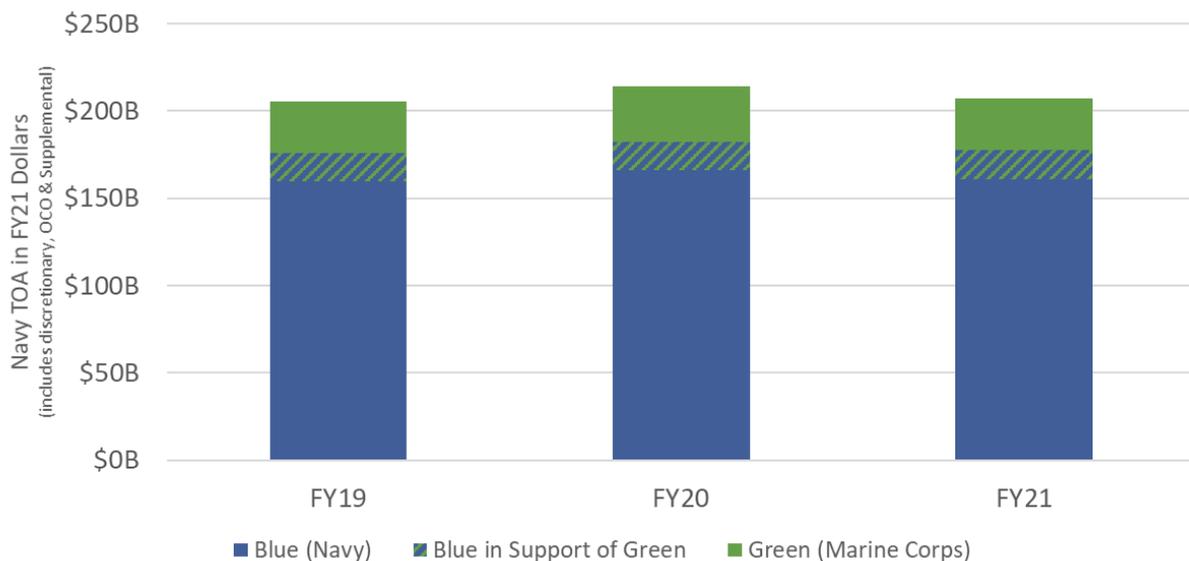
⁵⁷ U.S. Department of the Navy, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book Volume 1 of 1, Shipbuilding and Conversion, Navy*, 215.

⁵⁸ Commandant of the Marine Corps, “MARINE CORPS ORDER P3121.1: Marine Corps Planning and Programming Manual,” United States Marine Corps, October 1, 1991, <https://www.marines.mil/portals/1/Publications/MCO%20P3121.1.pdf?ver=2012-10-11-163734-710>.

⁵⁹ Ibid.

remaining \$16.6 billion of blue-in-support-of-green funding includes: \$1.4 billion for the procurement of 10 F-35B aircraft (down from the 15 projected in PB20); \$1.0 billion for the procurement of 7 CH-53K heavy-lift helicopters (down from the 12 projected in PB20); and \$2.7 billion for Marine Corps RDT&E investments. In total, the Marine Corps budget accounts for approximately 22.2 percent of the overall Department of the Navy discretionary budget request for FY 2021.

Figure 31: Department of Navy Funding by Service, FY 2019 – FY 2021



The Marine Corps budget could change significantly in coming years with the Marine Corps’ ongoing Force Design 2030 process. Building on the commandant’s Planning Guidance issued in July 2019, the Force Design 2030 effort is intended to adapt the makeup of the force to align with its mission focus under the NDS.⁶⁰ Based on the current threat environment defined by long-range precision fires, the Commandant’s guidance emphasizes greater integration with naval forces.⁶¹ The Force Design 2030 process recognizes that “the current force is unsuited to future requirements in size, capacity, and specific capability” and proposes an “Objective Force” for 2030 based on the conclusions of the first two phases of the design process and the assumption that the service will not receive additional funding.⁶² Proposed significant changes to Marine Corps’ force structure include:

- the reduction of approximately 12,000 personnel;
- the reduction of active component infantry battalions from 24 to 21;

⁶⁰ Commandant of the Marine Corps, *Commandant’s Planning Guidance* (Washington, DC: United States Marine Corps, July 2019), <https://www.hqmc.marines.mil/Portals/142/Docs/%2038th%20Commandant%27s%20Planning%20Guidance%202019.pdf?ver=2019-07-16-200152-700>; and Commandant of the Marine Corps, *Force Design 2030* (Washington, DC: United States Marine Corps), March 2020, <https://www.hqmc.marines.mil/Portals/142/Docs/CMC38%20Force%20Design%202030%20Report%20Phase%20I%20and%20II.pdf?ver=2020-03-26-121328-460>.

⁶¹ Commandant of the Marine Corps, *Commandant’s Planning Guidance*, 2.

⁶² Commandant of the Marine Corps, *Force Design 2030*, 2, 7.

- the reduction of reserve component infantry battalions from 8 to 6;
- the reduction of infantry battalions by 200 personnel;
- the elimination of all 7 tank companies;
- the reduction of cannon artillery batteries from 21 to 5;
- an increase in rocket artillery batteries from 7 to 21;
- the reduction of the number of aircraft in active component fighter attack squadrons from 16 to 10; and
- the reduction of active component heavy-lift aircraft helicopter squadrons from 8 to 5.⁶³

The Marine Corps estimates that the recommendations from Force Design 2030 will generate \$12 billion in savings to reinvest in modernization priorities, although it does not specify over what time period these savings are calculated.⁶⁴ These recommendations, some of which the Commandant has greater confidence in than in others, will be evaluated under the third phase of the redesign before implementation in phase IV.⁶⁵

⁶³ Ibid., 7. For a summary of the proposed changes, see Andrew Feickert, “New U.S. Marine Corps Force Design Initiatives,” CRS Report No. IN11281, (Washington, DC: June 2020), <https://fas.org/sgp/crs/natsec/IN11281.pdf>.

⁶⁴ Ibid., 8.

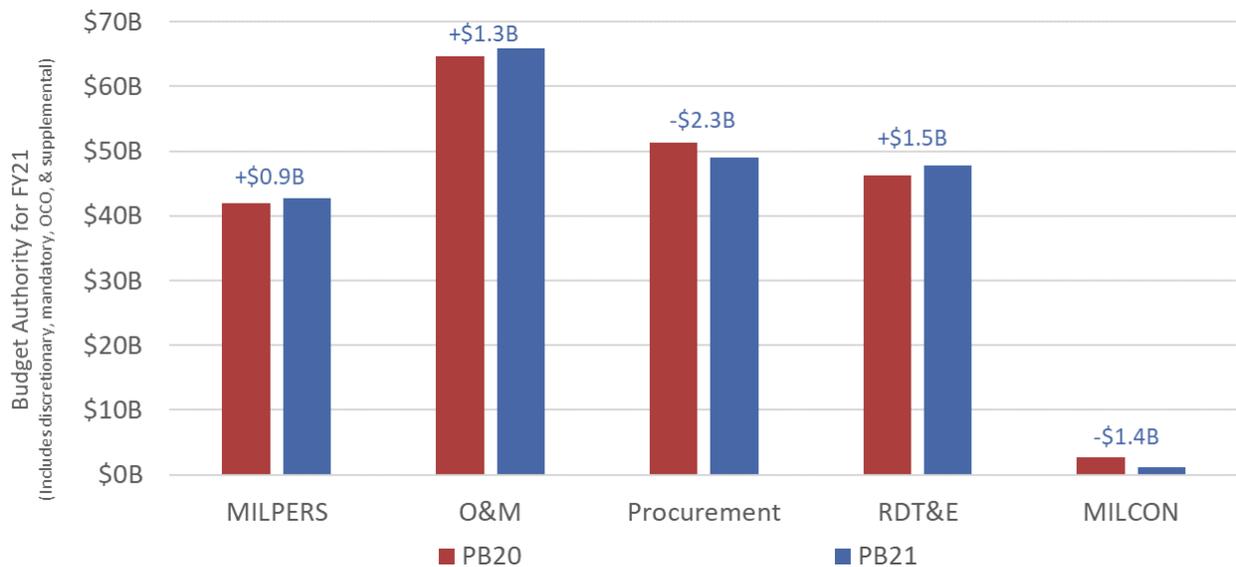
⁶⁵ Ibid., 8.

4 | Air Force and Space Force

Overall Trends

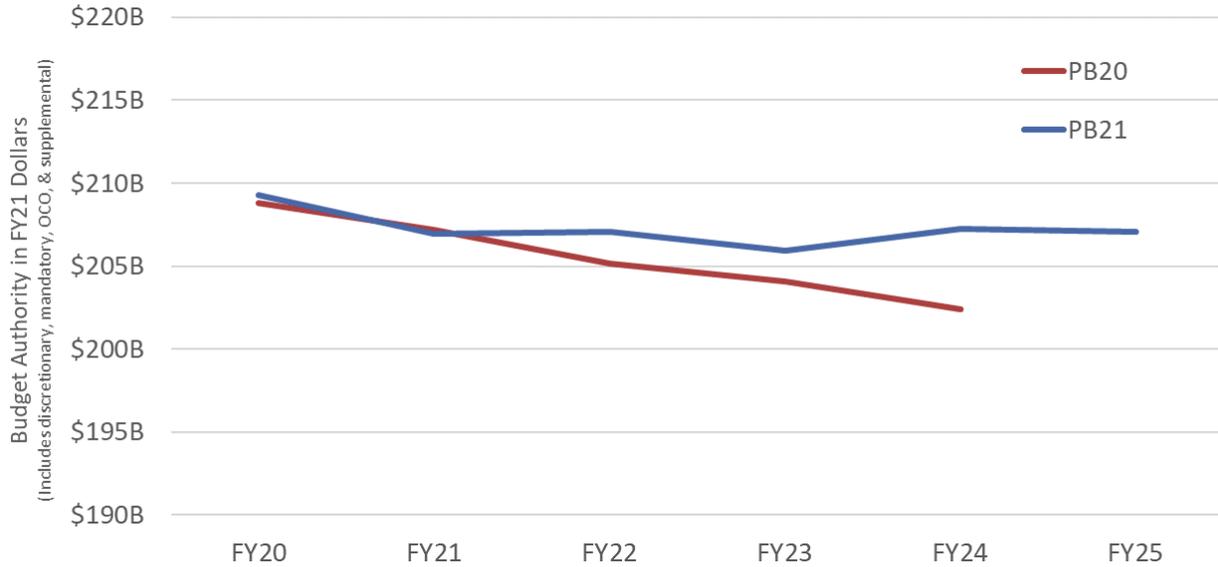
The Department of the Air Force’s budget request for FY 2021 totals \$206.9 billion, a slight decline in real terms from the FY 2020 enacted budget. Of the total, \$38.2 billion is “non-blue” pass through funding, and \$15.4 billion is Space Force funding. The total Department of the Air Force request for FY 2021 is \$0.26 billion less than was previously projected for FY 2021 in last year’s request, a difference of only 0.13 percent. While the topline budget has remained relatively consistent, the allocation of funding within the FY 2021 topline has changed from last year’s projection. Figure 32 compares the FY 2021 budget by title in the FY 2020 and FY 2021 requests. MILPERS, O&M, and RDT&E accounts received more funding than previously projected, and these increases are paid for by cuts to funding that had been planned for procurement and MILCON.

Figure 32: Department of the Air Force Funding for FY 2021 in PB20 versus PB21 by Title



The Air Force fared somewhat better than the other departments over the FYDP projection. As shown in Figure 33, the Air Force’s FYDP projection in PB21 is higher for FY 2022 and beyond than was previously projected in PB20. For the four years that the two requests overlap (FY 2021 to FY 2024), the Air Force receives a total of \$8.8 billion more in then-year dollars than previously projected.

Figure 33: Department of Air Force Budget Projection in PB21 versus PB20

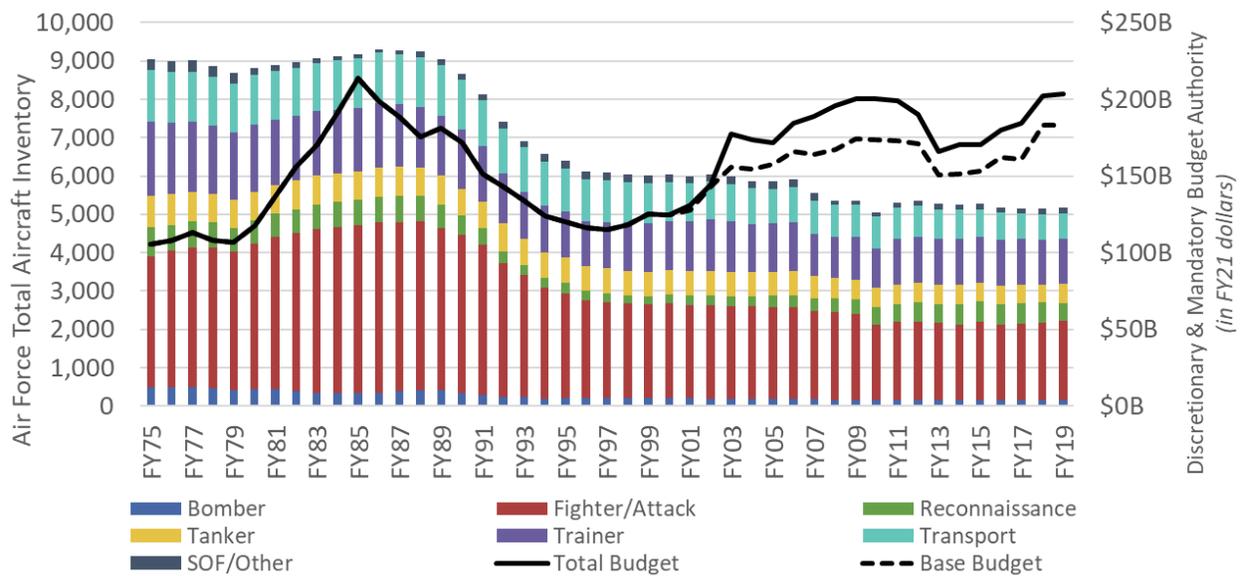


Changes in Force Structure

The relationship between the Air Force’s force structure and budget are similar to those of the other services. As shown in Figure 34, the Air Force’s budget declined by 46 percent from its peak in FY 1985 to its trough in FY 1997, and this drop in funding was matched by a commensurate decline in the total aircraft inventory: a 37 percent reduction in bombers, a 43 percent reduction in fighter/attack aircraft, and a 66 percent reduction in reconnaissance aircraft. However, the budget and aircraft inventory began to diverge when the budget began growing again. From FY 1997 to FY 2010, the Air Force budget increased by 74 percent, or 51 percent if OCO funding is excluded, while the aircraft inventory declined by another 18 percent, reaching an all-time low in FY 2010.

In the FY 2021 request, the Air Force proposes several aircraft retirements that would reduce the inventory to free up resources for newer, more advanced aircraft. Notably, the Air Force is proposing the retirement of 17 B-1s, 24 RQ-4s, 13 KC-135s, 16 KC-10s, and 24 C-130Hs, and further retirements are projected for future years. Ultimately, Congress could intervene to block the retirement of these aircraft, as it has done in the past, and force the Air Force to fund the maintenance and operation of these aircraft longer than planned.

Figure 34: Air Force Aircraft Inventory (TAI) and Budget



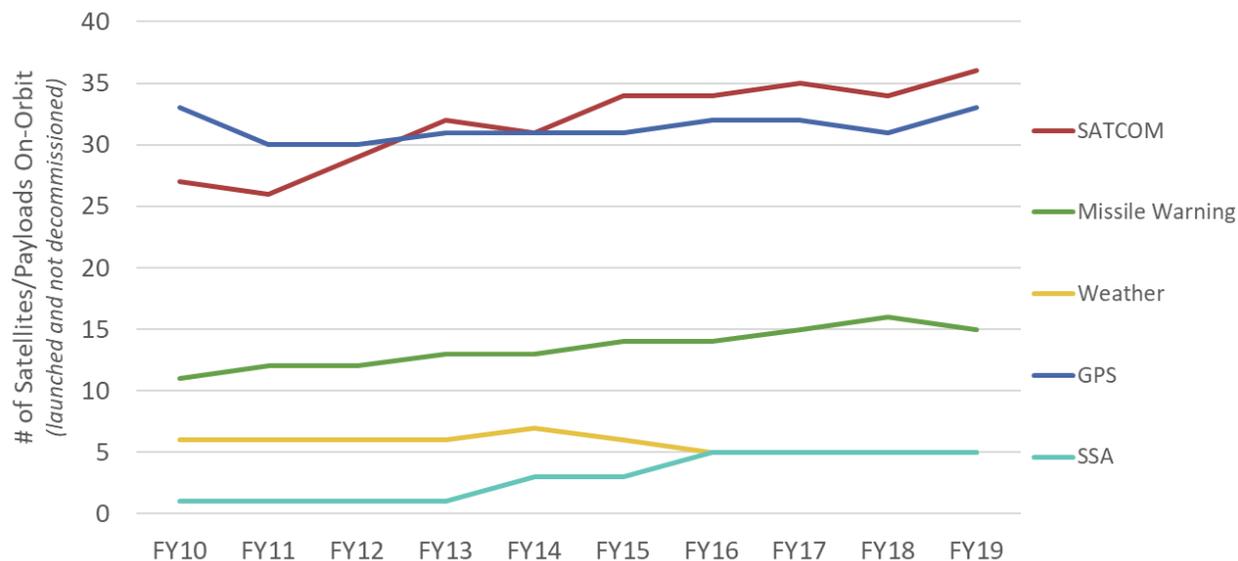
The Space Force inherits a force structure that was built by the Air Force and Navy over many decades. Figure 35 shows the number of operational military satellites by type from FY 2010 to present.⁶⁶ The number of satellite communications (SATCOM) satellites has grown over the past decade, primarily in the areas of protected and wideband communications as new AEHF and WGS satellites have come online faster than the previous generation of satellites have reached their end of life. The average age of operational SATCOM systems at the end of FY 2019 was just under 12 years. The number of GPS satellites has held relatively steady between 30 and 33 satellites, well above the minimum of 24 needed for continuous global coverage. With an average age of under 11 years at the end of FY 2019, nearly two-thirds of the GPS constellation now carries the more jam resistant M-Code signal for military users—although the fielding of M-Code-capable receivers and upgrades to the ground segment have not kept pace.⁶⁷ The oldest satellite type currently maintained by the military is the legacy Defense Meteorological Satellite Program (DMSP), with an average age of nearly 15 years for the remaining operational satellites at the end of FY 2019. Weather satellite follow-on programs have run into repeated acquisition problems over the past decade, with several starts and stops. The FY 2021 request includes weather-related RDT&E funding lines (Electro-Optical/Infrared Weather

⁶⁶ Satellites are included in the force structure once they are launched and until it can be determined that they are no longer being actively operated. It does not include classified, intelligence, science and technology, or otherwise unreported satellites. The main sources used for this analysis include: “Additions and Deletions for the 4-1-20 Release,” Union of Concerned Scientists Satellite Database, <https://ucsusa.org/sites/default/files/2020-05/changes%20to%20the%20database%204-1-20.pdf>; Jonathan McDowell, “Geostationary Orbit Catalog,” Jonathan’s Space Report, <https://planet4589.org/space/log/geo.log>; and “Gunter’s Space Page,” Gunter’s Space Page, <https://space.skyrocket.de/>.

⁶⁷ Government Accountability Office, *Global Positioning System: Better Planning and Coordination Needed to Improve Prospects for Fielding Modernized Capability*, GAO-18-74 (Washington, DC: December 2017), <https://www.gao.gov/assets/690/689022.pdf>.

Systems and Weather System Follow-On), both of which are in the early stages of research and development.

Figure 35: Space Force Satellites by Type



Major Air Force Acquisition Programs

Air Force acquisition funding in the FY 2021 request totals \$96.8 billion, which is a slight decrease (0.6 percent) below the level of funding enacted in FY 2020. Air Force RDT&E funding has grown rapidly, increasing by 77 percent in real terms over the past five years. The largest single component of RDT&E for the Air Force is the budget activity for Operational System Development (6.7), much of which is classified. While most of the classified funding lines do not include a projection for future years, the overall level of unreported funding in future years (FY 2022 to FY 2025) can be estimated by comparing the total RDT&E budget reported by DoD to the sum of all individual procurement lines in the R-2 budget justification documents. As shown in Figure 36, budget activity 6.7 grew by nearly \$10 billion (in FY 2021 dollars) to a peak of \$26.2 billion in FY 2021, and the combined level of 6.7 funding and other unreported funding is projected to decline through FY 2025.

The other major driver of growth in Air Force RDT&E funding is the budget activity for Advanced Component Development and Prototypes (6.4). As shown in Figure 37, this budget activity has increased by more than seven-fold since FY 2014, adjusting for inflation. Roughly half of the 6.4 funding requested in FY 2021 is for three acquisition programs: the B-21 bomber, the Ground-Based Strategic Deterrent (GBSD) nuclear-armed ballistic missile, and the Next-Generation Air Dominance (NGAD) fighter. Funding for the System Development and Demonstration (6.5) budget activity increased to a lesser extent in the late-2010s due to programs such as the Presidential Aircraft Replacement (VC-25B) and the Long-Range Standoff Weapon (LRSO) nuclear-armed cruise missile, but

it is now projected to decline each year over the FYDP to near the lowest level (in constant dollars) seen in more than two decades.

Figure 36: Air Force Operational System Development Funding

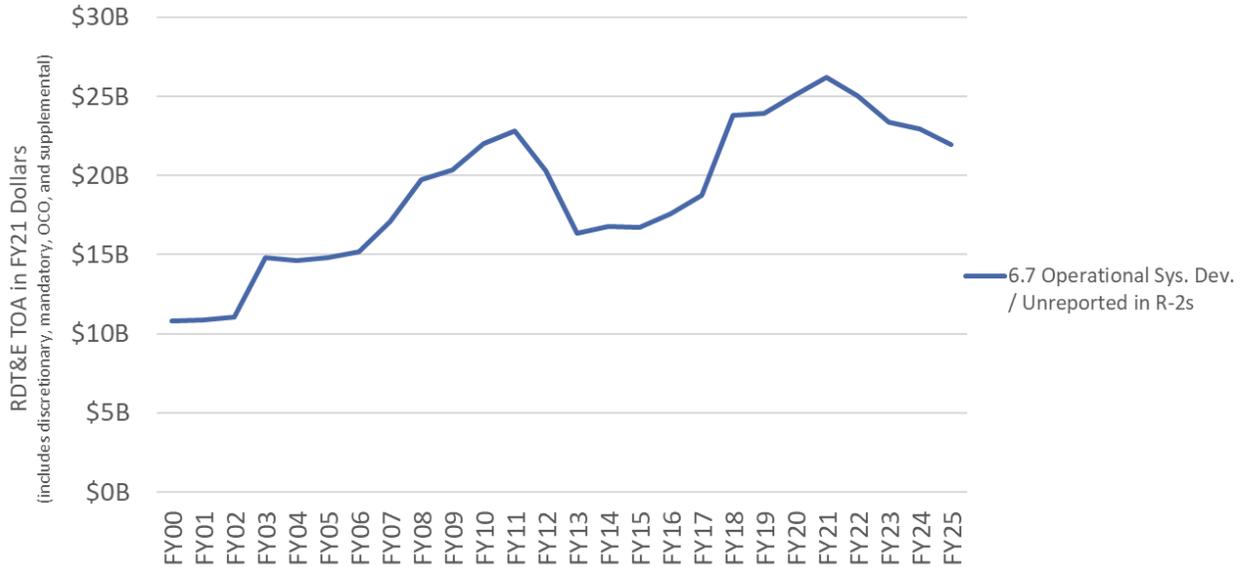
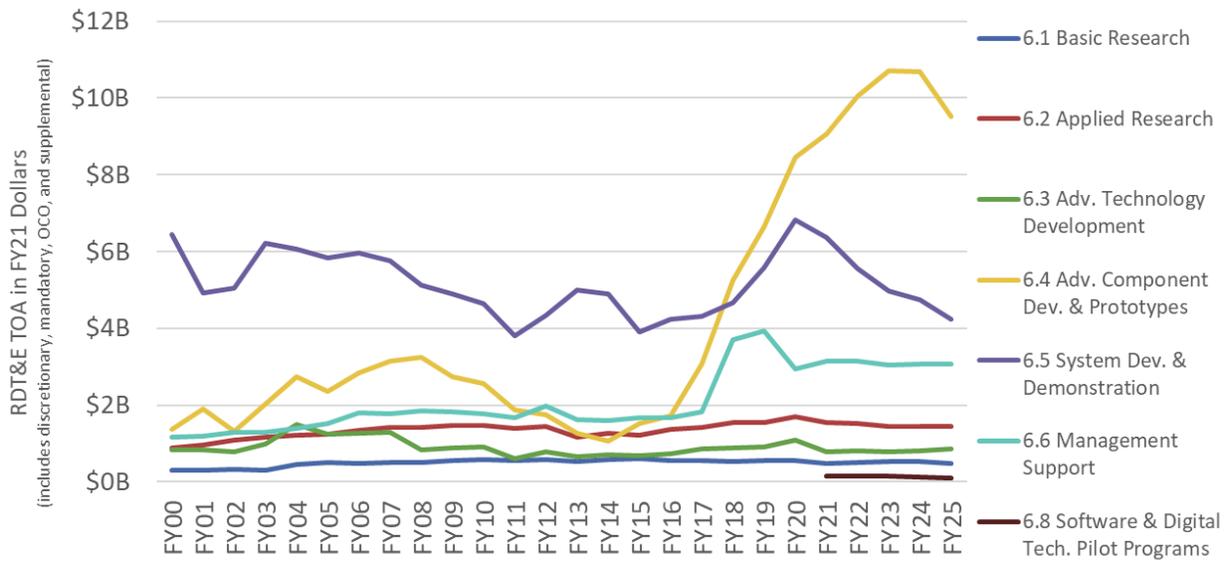


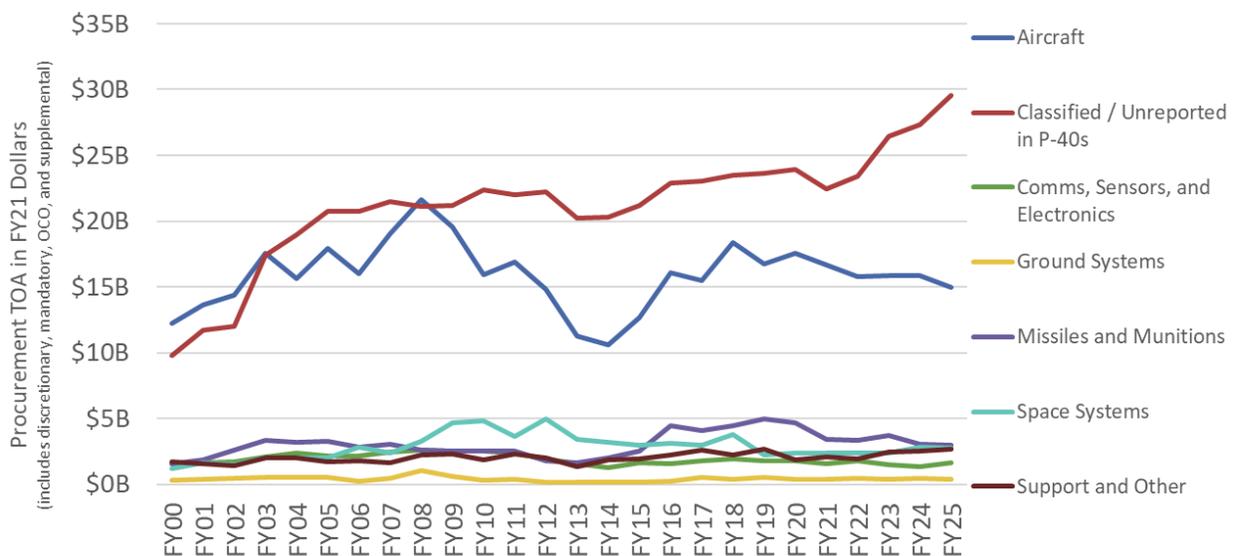
Figure 37: Air Force RDT&E Funding by Budget Activity



The science and technology part of the RDT&E budget—budget activities 6.1, 6.2, and 6.3—remains relatively small in comparison to the other budget activities. Funding for 6.3 Advanced Technology Development declines by 28 percent in real terms from FY 2020 to FY 2021 as the Air Force restructures the funding from 14 existing program elements into 5 new program elements: Next Gen Effects; Next Gen Platform; Future Integrated Technology; Foundational Development; and Persistent Knowledge, Awareness, and Command and Control Technology.

Air Force procurement funding is dominated by aircraft and classified systems, which together make up 80 percent of the procurement budget in FY 2021. Nearly all Air Force classified procurement lines do not include a projection for future years. However, the overall level of unreported funding (which can include some unclassified programs) for FY 2022 through FY 2025 is estimated by comparing the total Air Force procurement budget reported by DoD to the sum of all individual procurement lines in the P-40 budget justification documents. Figure 38 shows that the combination of classified and unreported procurement funding is projected to rise by 24 percent in real terms over the next five years, which may be due to procurement funding for the B-21 and GBSD programs that is expected but not yet reported in the budget justification documents.

Figure 38: Air Force Procurement Funding

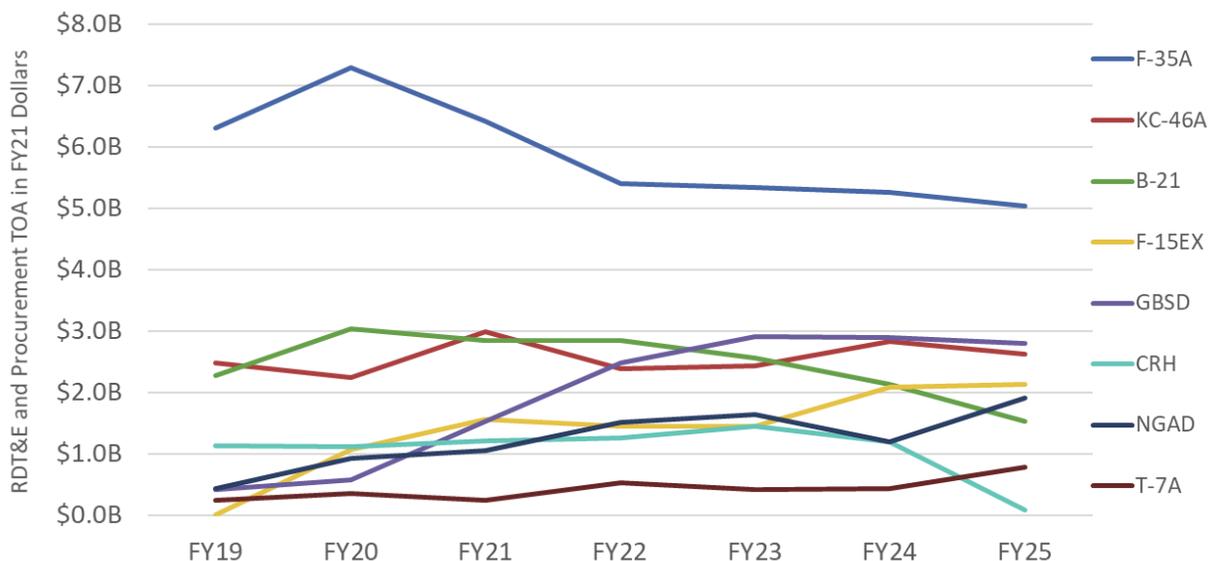


Aircraft procurement funding is down by 5.2 percent in FY 2021 and is projected to continue declining through FY 2025. Even though Air Force aircraft procurement funding is declining, it exceeds Navy aircraft procurement funding in FY 2021 for the first time since FY 2009. Funding for missiles and munitions procurement is down 26 percent in real terms in FY 2021 due mainly to reductions in the Joint Direct Attack Munition (JDAM) and general purpose bombs. JDAM procurement funding more than quadrupled from FY 2015 to FY 2020 to replace weapons that were being used in combat against the Islamic State, and the FY 2021 request would return JDAM production to a more sustainable level. Funding for space procurements, which transfers to the Space Force in FY 2021, is essentially flat at \$2.4 billion and remains well below the average of \$4.5 billion annually (in FY 2021 dollars) for space procurement seen from FY 2009 to FY 2012. This is due in part to new space acquisition programs that are beginning development but are not yet reporting procurement funding in the FYDP.

The section below details the top Air Force acquisition programs in the FY 2021 budget request. Together, these eight programs, shown in Figure 39, consume 25 percent (\$17.9 billion) of the Air

Force’s acquisition budget in FY 2021. The Space Force’s major acquisition programs are detailed separately in a following section.

Figure 39: Air Force Major Acquisition Programs



F-35A Joint Strike Fighter

The F-35A is by far the largest acquisition program in the Air Force’s portfolio. For several years, Congress has authorized and appropriated funding for more F-35As than the Air Force has requested. In FY 2020, for example, the Air Force requested 48 aircraft, but Congress approved 62 instead. The FY 2021 budget again requests 48 F-35As, which would represent a decline of nearly a quarter in the production rate if approved by Congress. The FYDP projects that the Air Force will remain steady at a procurement rate of 48 aircraft per year through FY 2025, which is less than the planned full-rate production of 60 F-35As per year.⁶⁸

KC-46A

The KC-46A program plans to procure a total of 179 aircraft to modernize roughly one-third of the Air Force’s existing aerial refueling fleet. Congress has already appropriated funds for 79 aircraft in prior years, and the FY 2021 budget requests \$3.0 billion in funding for 15 aircraft. Production is expected to continue at a rate of 12 to 15 aircraft per year through FY 2027.⁶⁹ While the KC-46 is intended to primarily replace the KC-135 fleet, the FY 2021 request proposes accelerating the retirement of KC-10s and using initial KC-46A deliveries to backfill these units. Delays in the KC-46A program have meant that aircraft are not becoming operational as quickly as planned, which is having a near-term impact

⁶⁸U.S. Department of the Air Force, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book Volume 1 of 2, Aircraft Procurement, Air Force* (Washington, DC: February 2020), 1, https://www.saffm.hq.af.mil/Portals/84/documents/FY21/PROCUREMENT_FY21%20Air%20Force%20Aircraft%20Procurement%20Vol%201.pdf?ver=2020-02-10-145310-973.

⁶⁹ *Ibid.*, 31.

on readiness. In an April 2020 report to Congress, the Air Force acknowledged that only half of the training sorties that requested aerial refueling support each year are receiving that support, and as many as 30,000 hours of aerial refueling missions are not being supported each year.⁷⁰

B-21

The B-21 Raider is the Air Force's next-generation stealthy bomber and the only bomber aircraft currently in production. The Air Force plans to procure at least 100 aircraft in total, with some studies suggesting more aircraft may be needed.⁷¹ The FY 2021 budget requests \$2.8 billion in RDT&E funding to continue engineering and manufacturing development. The budget does not yet include a projection for procurement funding, although it does show RDT&E funding beginning to ramp down through FY 2025, which usually corresponds with low-rate initial production. The budget continues to state that initial aircraft will be operational beginning in the mid-2020s, which suggests that the Air Force should begin reporting a procurement budget line in the FY 2022 or FY 2023 request.⁷²

F-15EX

In the FY 2020 budget, the Air Force proposed, and Congress approved, the procurement of a new variant of the F-15 to replace the current fleet of F-15C/Ds. The budget requests \$1.6 billion in funding for 12 aircraft in FY 2021, and it projects another \$7.1 billion in funding for 64 aircraft from FY 2022 through FY 2025. In total, the program plans to procure at least 144 F-15EXs through the early-2030s.⁷³

GBSD

The Ground Based Strategic Deterrent (GBSD) program is intended to replace the existing fleet of Minuteman III intercontinental ballistic missiles. Like the B-21 program, the FY 2021 request includes RDT&E funding for the GBSD program, but it does not yet report procurement funding. The budget requests \$1.5 billion in FY 2021 and a total of \$12.6 billion over the FYDP. The program is expected to pass Milestone B and begin engineering and manufacturing development in the fourth quarter of FY 2020 (July to September 2020), and initial fielding of operational missiles is planned for FY 2029.⁷⁴

NGAD

The Next-Generation Air Dominance (NGAD) program is the Air Force's program to begin the development of a sixth-generation air dominance fighter. The program plans to use a "Digital Century

⁷⁰ Department of the Air Force, *CRR-FY20 Contractor-Operated Aerial Refueling Aircraft* (Washington, DC: DoD, April 2020), 1, 10, <http://lignesdedefense.blogs.ouest-france.fr/files/Contractor-Operated%2BAerial%2BRefueling%2BAircraft%2B%28with%2Bsig%29.pdf>.

⁷¹ Jeremiah Gertler, *Air Force B-21 Raider Long-Range Strike Bomber*, CRS Report No. R44463 (Washington, DC: Congressional Research Service, October 2018), 9, <https://fas.org/sgp/crs/weapons/R44463.pdf>.

⁷² U.S. Department of the Air Force, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book Volume 2 of 3, Research, Development, Test & Evaluation, Air Force* (Washington, DC: February 2020), 107, https://www.saffm.hq.af.mil/Portals/84/documents/FY21/RDTE_/FY21%20Air%20Force%20Research%20Development%20Est%20and%20Evaluation%20Vol%20II.pdf?ver=2020-02-12-145218-377.

⁷³ U.S. Department of the Air Force, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book Volume 1 of 2, Aircraft Procurement, Air Force*, 17.

⁷⁴ U.S. Department of the Air Force, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book Volume 2 of 3, Research, Development, Test & Evaluation, Air Force*, 267.

Series” approach that relies on agile development, open architectures, and digital engineering to increase the speed of acquisitions and incentivize industry to focus on developing innovative new technologies rather than sustaining existing systems.⁷⁵ While the acquisition strategy for the program has not yet been finalized, it plans to have contractors re-compete as soon as every five years for small batches of aircraft, as few as 72 aircraft per type. Last year, Congress cut the requested \$1.0 billion in FY 2020 funding by 9.5 percent due to concerns of program risk. The current budget requests another \$1.0 billion in FY 2021 and projects a total of \$7.3 billion over the FYDP.⁷⁶

CRH

The Air Force selected the HH-60W to be its new Combat Rescue Helicopter (CRH) to replace the existing fleet of HH-60G helicopters used for recovering aircrew and other personnel from hostile environments. The Air Force requests a total of 19 aircraft in FY 2021, three of which are funded in the OCO budget. The request projects a procurement rate of 20 aircraft per year in FY 2022 and FY 2023 before winding down, with a total of 103 aircraft procured over the life of the program.⁷⁷

T-7A

In FY 2021, the Air Force continues development and testing of its new training aircraft, the T-7A, which is intended to replace the service’s existing fleet of T-38Cs. The budget indicates that procurement of the T-7A will begin in FY 2022 and continue beyond the FYDP. The Air Force plans to procure a total of 351 aircraft.⁷⁸

Space Force Budget

The FY 2021 request is the first to include a separate budget for the newly created Space Force, which totals \$15.4 billion in FY 2021. The vast majority of this funding (\$15.3 billion) is transfers of existing budget lines, and only \$111 million is new funding to pay for the additional personnel and resources needed for the Space Force headquarters and field centers. Of the total funding requested for the Space Force, \$2.6 billion is for O&M, \$2.4 billion is for procurement, and \$10.3 billion is for RDT&E. The Air Force notes in its budget request that it has not yet transferred MILPERS and MILCON funding to the Space Force. The Space Force portion of the Air Force’s MILPERS budget is estimated to be \$0.8 billion in FY 2021. The budget shows that the service expects to have 6,434 military personnel and 3,545 civilian FTEs either transferred or assigned to the Space Force by September 30, 2021.⁷⁹ The

⁷⁵ For a more complete description of the Digital Century Series approach, see Morgan Dwyer, *The Air Force Digital Century Series: Beyond the Buzzwords* (Washington, DC: CSIS, November 18, 2019), <https://aerospace.csis.org/the-air-force-digital-century-series-beyond-the-buzzwords/>.

⁷⁶ U.S. Department of the Air Force, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book Volume 2 of 3, Research, Development, Test & Evaluation, Air Force*, 295.

⁷⁷ U.S. Department of the Air Force, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book Volume 1 of 2, Aircraft Procurement, Air Force*, 95.

⁷⁸ U.S. Department of the Air Force, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book Volume 2 of 3, Research, Development, Test & Evaluation, Air Force*, 743.

⁷⁹ Department of the Air Force, *FY 2021 Budget Overview* (Washington, DC: February 10, 2020), 8, https://www.saffm.hq.af.mil/Portals/84/documents/FY21/SUPPORT_FY21%20Budget%20Overview_1.pdf?ver=2020-02-10-152806-743.

transition of budget, personnel, and activities to the Space Force from the other services and OSD will continue over the coming years.

DoD began reporting a major force program category for space (MFP-12) in FY 2018. MFP-12 provides the total amount of the DoD budget going to military space-related programs and activities, including the costs of personnel, research, facilities, and other activities that support military space. It does not include intelligence community space programs and activities, nor are these intended to be part of the Space Force for the time being. The total MFP-12 budget for space in the FY 2021 request is \$19.2 billion, which means that an additional \$3.8 billion in space-related funding still resides in the accounts of other military services and OSD, including the \$800 million in Air Force MILPERS that has not yet transferred to the Space Force and \$337 million in funding for the Space Development Agency. MFP-12 projects that military space funding will grow by a total of 14 percent, adjusting for inflation, through FY 2025. Much of that growth is in the Space Development Agency budget, which is discussed in the Defense-wide chapter of this report.

In the wake of the creation of the Space Force, the other military services appear to have recategorized parts of their budget to no longer be identified as space related. This is evident in the RDT&E portion of the budget because in the process of establishing MFP-12 for space, DoD relabeled the RDT&E program element codes associated with space to begin with the number 12. With the creation of the Space Force in the FY 2021 request, the program elements transferring to the new service have their program element codes modified again to end in the suffix SF. In the FY 2021 request, the other services appear to have reclassified 10 funding lines that were previously identified as being space-related before the Space Force was created (i.e., part of MFP-12) to now be listed as part of other MFPs and not part of the space budget. These funding lines total \$265 million in FY 2021, as detailed in Table 3.

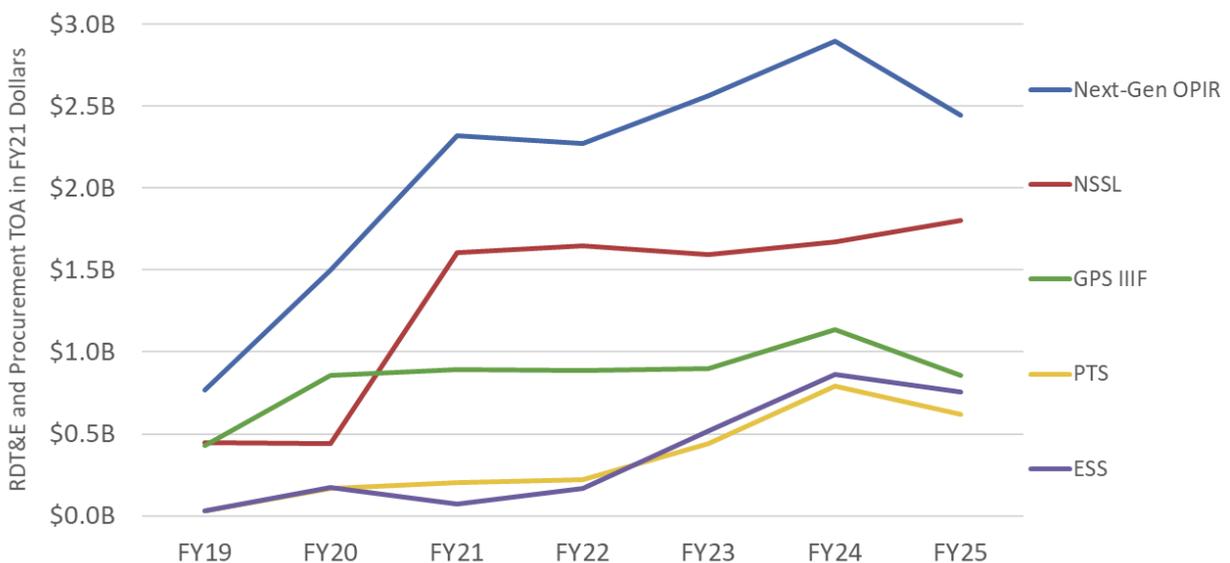
Table 3: RDT&E Program Elements Moving Out of MFP-12 in the FY 2021 Request

Service	Program Element Name	Old PE Code	New PE Code	FY 2021 Request
Air Force	AF TENCAP	1202247F	0207247F	\$21,644K
Air Force	Combat Survivor Evader Locator	1203176F	0305176F	\$973K
Air Force	Global Sensor Integrated on Network (GSIN)	1201017F	0301017F	\$0K
Air Force	Integrated Broadcast Service (IBS)	1203179F	0305179F	\$8,864K
Army	Army Space Systems Integration	1206308A	0603308A	\$26,230K
Army	Assured Positioning, Navigation and Timing (PNT)	1206120A	0604120A	\$128,125K
Army	Joint Tactical Ground System	1208053A	0208053A	\$9,510K
Army	SATCOM Ground Environment (SPACE)	1203142A	0303142A	\$18,684K
Navy	Satellite Communications (SPACE)	1203109N	0303109N	\$41,978K
Navy	SEW Surveillance/Reconnaissance Support	1206867N	0605867N	\$8,559K

The first budget request for the Space Force reveals several things that make it different from the other services. Foremost is that a much larger share of the budget is for acquisitions than is the case for the other services. Even if the \$800 million in Air Force MILPERS costs used for Space Force personnel is included in the total Space Force budget, 79 percent of its funding goes to RDT&E and procurement accounts, compared to 47 percent for the overall Department of the Air Force and 21

percent for the Army. The Space Force also has a large share of its RDT&E funding in classified accounts (35 percent), and its ratio of procurement to RDT&E—a measure of how much it spends developing new capabilities versus buying them in quantity—is much lower. While the Space Force does not yet boast any acquisition programs as large as the top three Air Force programs (F-35A, B-21, and KC-46A), it has a number of major programs in development, as detailed below and shown in Figure 40. These five programs consume 40 percent (\$5.1 billion) of the Space Force’s acquisition budget for FY 2021.

Figure 40: Space Force Major Acquisition Programs



Next-Generation OPIR

The Next-Generation Overhead Persistent Infrared (OPIR) program is intended to replace the existing constellation of Space-Based Infrared (SBIR) missile warning satellites. It is the largest acquisition program in the Space Force’s inaugural budget request, with \$2.3 billion requested in FY 2021 and a total of \$12.5 billion projected over the next five years. Block 0 of the program includes three satellites in geostationary orbit and two satellites in a polar highly elliptical orbit. The program expects to begin launching satellites as early as 2025.⁸⁰

National Security Space Launch

The second-largest acquisition program in the Space Force’s portfolio is a follow-on to the Evolved Expendable Launch Vehicle program. With the imminent planned retirement of the military’s two main medium/heavy-lift launchers (the Atlas V and Delta IV), the Space Force initiated a competition to select two families of launch vehicles to service military space missions for at least the next five

⁸⁰ U.S. Department of the Air Force, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book Volume 1 of 1, Research, Development, Test & Evaluation, Space Force* (Washington, DC: February 2020), 159-186, https://www.saffm.hq.af.mil/Portals/84/documents/FY21/RDTE_/FY21%20Space%20Force%20Research%20Development%20Test%20and%20Evaluation.pdf?ver=2020-02-11-083608-887.

years through the National Security Space Launch (NSSL) program. The budget requests \$1.6 billion in FY 2021, and a total of \$8.3 billion is projected over the FYDP for this program.⁸¹ In August 2020 the Space Force announced that United Launch Alliance (ULA) and SpaceX won the competition, with ULA receiving 60 percent of future launch orders and SpaceX receiving 40 percent. Concurrent with the announcement it awarded the first three launch orders under this contract, with ULA receiving two orders for launches in the second and fourth quarters of FY 2022 and SpaceX receiving an order for one launch in the fourth quarter of FY 2022.⁸²

GPS III F

The Global Positioning System III Follow-on (GPS III F) program continues production of the GPS III satellites beyond the first 10 space vehicles procured through the GPS III program. The GPS III F satellites have new features, such as the regional military protection capability to deliver high-powered military code (M-Code) signals in specific areas to counter jamming and spoofing attempts. The budget requests \$891 million for the program in FY 2021, and \$4.7 billion is projected over the FYDP for the development and procurement of 11 satellites. The program plans to procure a total of 19 satellites in all through the late-2020s.⁸³

PTS

The Protected Tactical Satellite Communications (PTS) program is intended to provide jam-resistant, low-probability-of-intercept satellite communications for tactical forces operating in highly contested environments. The acquisition strategy for the program uses a payload-centric approach that will allow PTS payloads to be hosted on other U.S. government, commercial, and international partner satellites to enhance resilience by allowing more payloads to be built and launched and by disaggregating tactical users of protected satellite communications from strategic users. The budget requests \$205 million in FY 2021 and \$2.3 billion over the FYDP in RDT&E funding. The request does not yet provide a projection for procurement funding in future years or total costs and satellite/payload quantities for the program.⁸⁴

ESS

In contrast to the PTS program, the Evolved Strategic Satellite Communications (ESS) program is a follow-on to the Advanced Extremely High Frequency (AEHF) program intended to support strategic missions, such as nuclear command and control. The program expects to award up to three contracts

⁸¹ U.S. Department of the Air Force, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book Volume 1 of 1, Research, Development, Test & Evaluation, Space Force*, 187-194.

⁸² U.S. Department of the Air Force, *Space Force awards National Security Space Launch Phase 2 launch service contracts to ULA, SpaceX* (Washington, DC: August 7, 2020), <https://www.af.mil/News/Article-Display/Article/2305576/space-force-awards-national-security-space-launch-phase-2-launch-service-contra/>.

⁸³ U.S. Department of the Air Force, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book Volume 1 of 1, Procurement, Space Force* (Washington, DC: February 2020), 29, https://www.saffm.hq.af.mil/Portals/84/documents/FY21/PROCUREMENT_FY21%20Space%20Force%20Procurement_1.pdf?ver=2020-02-10-145330-537.

⁸⁴ U.S. Department of the Air Force, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Justification Book Volume 1 of 1, Research, Development, Test & Evaluation, Space Force*, 75-81.

in FY 2020 for rapid prototyping and risk reduction before proceeding into production. The budget requests \$71 million in FY 2021 and projects a total of \$2.4 billion in RDT&E funding over the FYDP. The program does not yet include a projection in the budget for procurement funding.⁸⁵

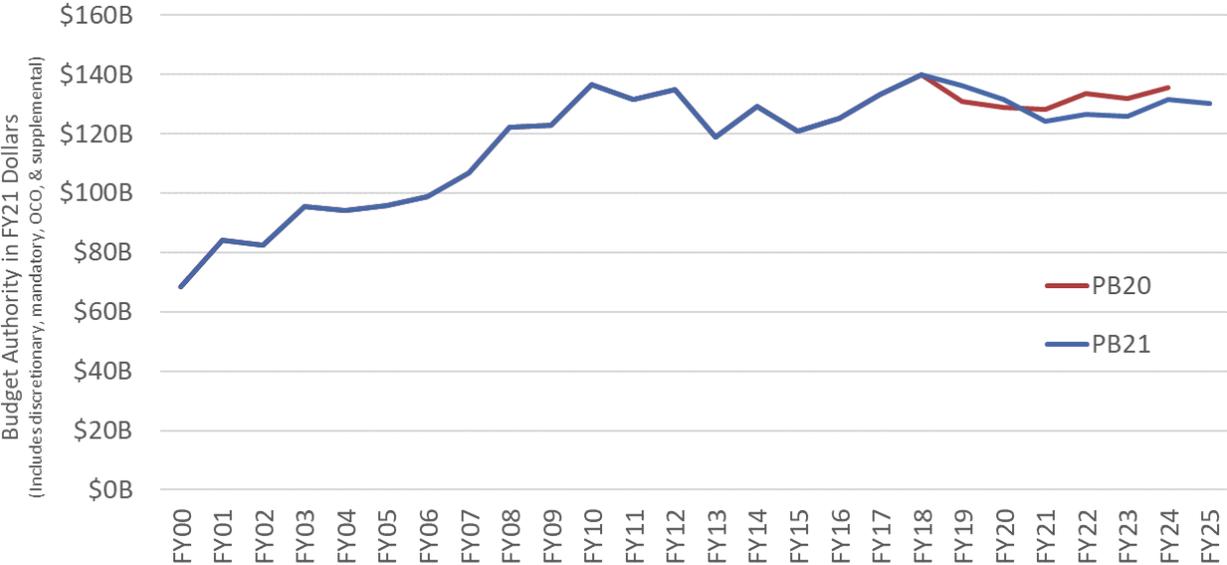
⁸⁵ Ibid., 83-90.

5 | Defense-wide

Overall Trends

The defense-wide portion of the budget, sometimes referred to as the fourth estate, includes the parts of the DoD budget that do not fall under one of the military services. As shown in Figure 41, defense-wide funding more than doubled in real terms from FY 2000 to FY 2010 but has since leveled off. This growth was due to several factors, such as growth in military health care costs. Since FY 2010, both Congress and DoD have focused efforts on limiting growth—and in some cases reducing—defense-wide costs. Overall, defense-wide funding for FY 2021 is lower in PB21 than had previously been projected in PB20 for FY 2021, and it is projected to remain lower than previous projections in future years.

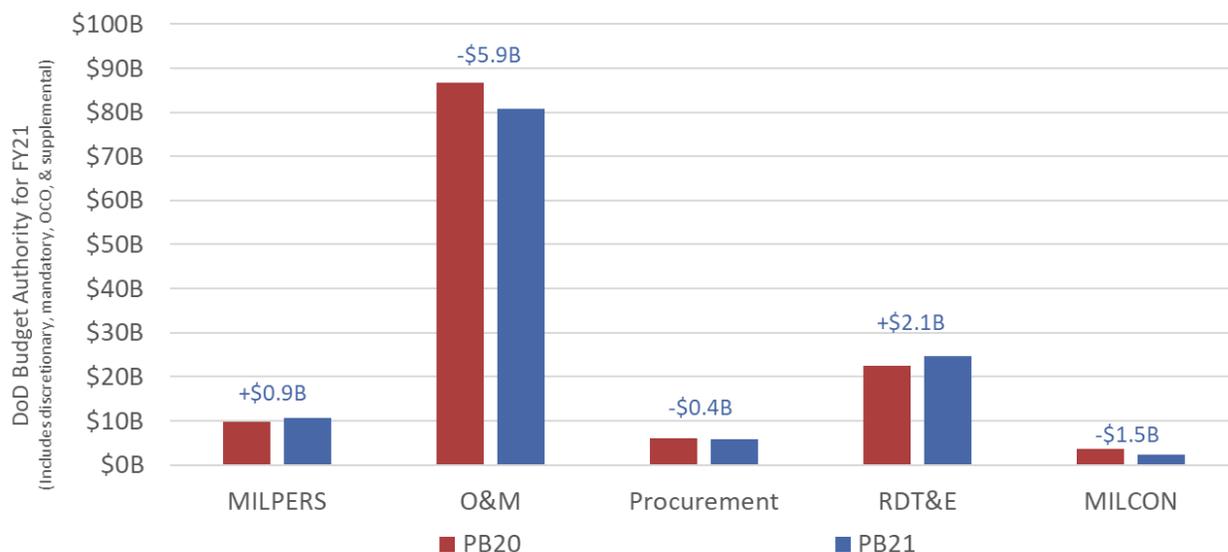
Figure 41: Defense-wide Funding in PB20 versus PB21



In addition to the overall reduction in projected funding, the FY 2021 request proposes several notable shifts among defense-wide accounts, shown in Figure 42. O&M funding is down \$5.9 billion relative to the projection for FY 2021 in last year’s budget. Many of the reductions in defense-wide O&M are part of the defense-wide review instituted by Defense Secretary Mark Esper to identify savings in defense-wide accounts. MILCON is \$1.5 billion lower than previously projected due to the deferment of several construction projects, and procurement is \$0.4 billion lower due in part to the termination of the Redesigned Kill Vehicle program, discussed later in the Missile Defense Agency section of this chapter. Defense-wide MILPERS funding, which is \$0.9 billion higher than previously projected, consists mainly of mandatory funding for the concurrent receipt of military retirement pay for retirees that also

receive a veteran’s pension. The largest increase in defense-wide funding is in RDT&E, driven by increases in classified research and development programs.

Figure 42: Defense-wide Funding for FY 2021 in PB20 versus PB21 by Title



Defense-wide Review

Immediately after taking office as secretary of defense in July 2019, Secretary Esper initiated a comprehensive review of defense-wide accounts to identify savings that could be reinvested in higher priority programs and activities. Billed as a “zero-based” budget review, it included the budgets of the Office of the Secretary of Defense (OSD), Joint Staff, Defense Agencies, DoD Field Activities, DoD Inspector General, Special Operations Command (SOCOM), and other defense-wide programs and activities.⁸⁶ In total, the review encompassed \$99 billion of defense-wide funding, which is more than three-quarters of total defense-wide accounts. The review categorized changes as being savings (cuts) or transfers to other accounts, and it sorted them into five categories, as shown in Figure 43. The savings and transfers are relative to the previously projected level of funding for FY 2021 in last year’s request—referred to as the FY 2021 baseline.⁸⁷

The proposed savings resulting from the review total \$5.7 billion in the request. Roughly half of the total savings (\$2.7 billion) are from the warfighting and support category, which includes \$1.5 billion in cuts to SOCOM. In the personnel and benefits category, the review also identified \$1.2 billion in savings and \$1.9 billion in transfers to the services. These savings primarily come from cuts to the

⁸⁶ Seamus P. Daniels, *Understanding DoD’s Defense-Wide Zero-Based Review* (Washington, DC: CSIS, September 4, 2019), <https://defense360.csis.org/understanding-dods-defense-wide-zero-based-review/>.

⁸⁷ Department of Defense, *Report to Congress: FY 2021 Defense Wide Review* (Washington, DC: DoD, January 2020), <https://media.defense.gov/2020/Feb/06/2002244621/-1/-1/1/FY-2021-DEFENSE-WIDE-REVIEW-FINAL.pdf>

Defense Health Agency (\$1.0 billion) and transfers of medical readiness funding to the services (\$1.9 billion).⁸⁸

While many of the changes proposed in the defense-wide review can be executed under existing DoD authorities, some of the savings and transfers will require Congressional approval. In addition, Secretary Esper also initiated a comprehensive review of the activities, programs, and forces in each of the COCOMs, beginning with U.S. Africa Command and U.S. Southern Command. Like the defense-wide review, the aim of the COCOM review is to identify personnel and funding being used for lower priority programs and activities that can be reallocated to focus on higher priorities in the NDS.⁸⁹

Figure 43: Defense-wide Review Savings and Transfers



MDA

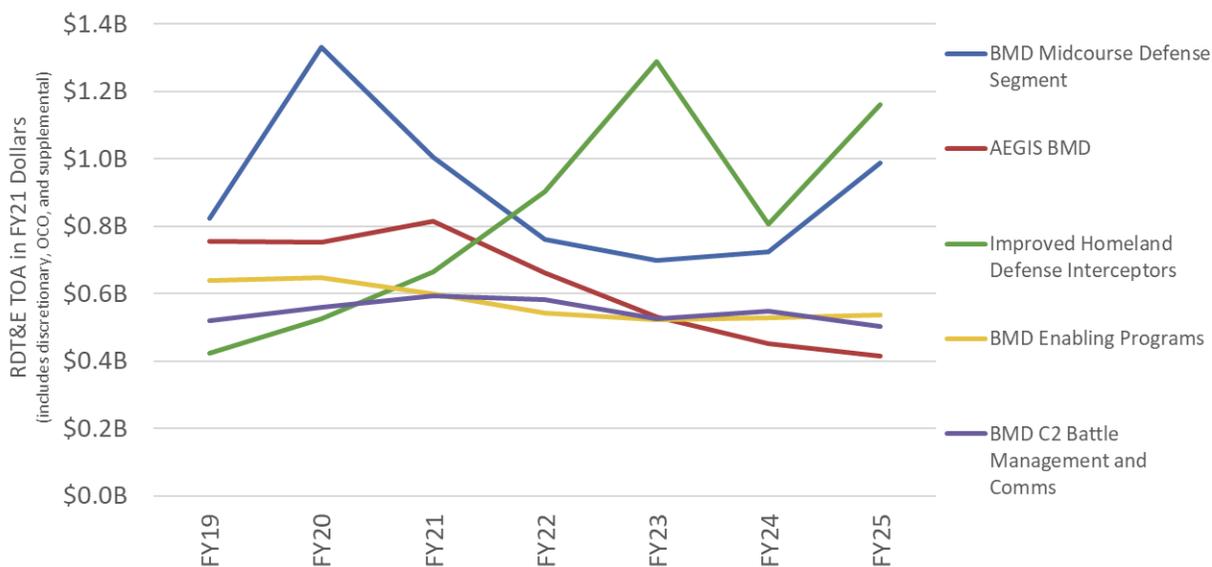
The Missile Defense Agency’s (MDA) FY 2021 request includes \$0.5 billion in O&M, \$7.2 billion in RDT&E, \$1.5 billion in procurement, and \$48 million in MILCON funding. Both RDT&E and procurement are lower than the enacted levels of funding for FY 2020, which totaled \$8.1 billion and \$1.7 billion, respectively. The top five RDT&E funding lines in the request, shown in Figure 44, include several broad program elements that capture a number of development initiatives that collectively encompass roughly half of the total MDA RDT&E budget. The largest program element in MDA’s RDT&E request is for the Ballistic Missile Defense (BMD) Midcourse Defense Segment. The reduction in funding for this program element from FY 2020 to FY 2021 is due in part to delays in components of the Sea-Based X-Band Radar. Funding for Improved Homeland Defense Interceptors is increasing to support two contractors developing competing designs for the Next Generation Interceptor—a follow-

⁸⁸ Ibid., 3.

⁸⁹ Secretary of Defense Mark T. Esper, “Department of Defense Posture Statement,” testimony before the Senate Armed Services Committee, March 4, 2020, p. 10, https://www.armed-services.senate.gov/imo/media/doc/Esper_03-04-20.pdf.

on to the recently terminated Redesigned Kill Vehicle. The request also moves funding for the Hypersonic and Ballistic Tracking Space Sensor (HBTSS) from MDA to SDA’s Space Sensor Layer program.⁹⁰

Figure 44: MDA Major RDT&E Funding Lines

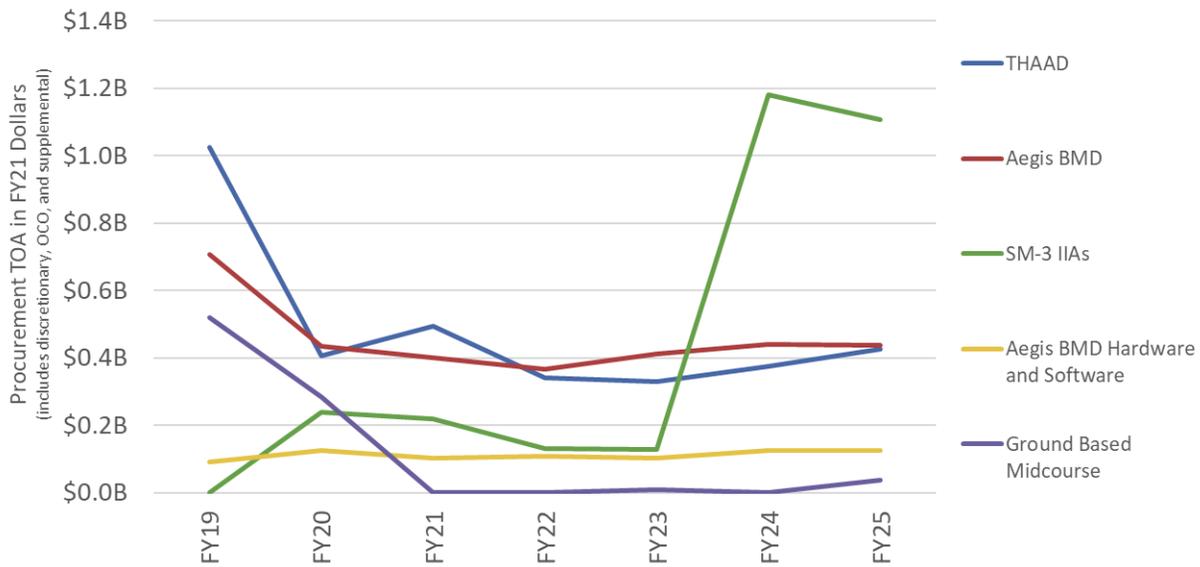


The top five procurement line items in the MDA request, shown in Figure 45, comprise 83 percent of the total MDA procurement budget in FY 2021. The largest of these lines is for the Terminal High Altitude Area Defense (THAAD) program, which is growing in FY 2021 but is still far below the level of funding seen in FY 2019, when procurement quantities were almost three times higher. Funding for Ground Based Midcourse procurement drops to zero in FY 2021 due to the termination of the Redesigned Kill Vehicle Program. In the FYDP projections, funding for SM-3 Block IIA is projected to increase sharply in FY 2024, when production quantities are expected to increase to 50 or more interceptors annually.⁹¹

⁹⁰ U.S. Department of Defense, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Missile Defense Agency, Defense-Wide Justification Book Volume 2a of 5, Research, Development, Test & Evaluation, Defense-Wide* (Washington, DC: February 2020), https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2021/budget_justification/pdfs/03_RDT_and_E/RDTE_Vol2_MDA_RDTE_PB21_Justification_Book.pdf.

⁹¹ U.S. Department of Defense, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Missile Defense Agency, Defense-Wide Justification Book Volume 2b of 2, Procurement, Defense-Wide* (Washington, DC: February 2020).

Figure 45: MDA Major Procurement Funding Lines

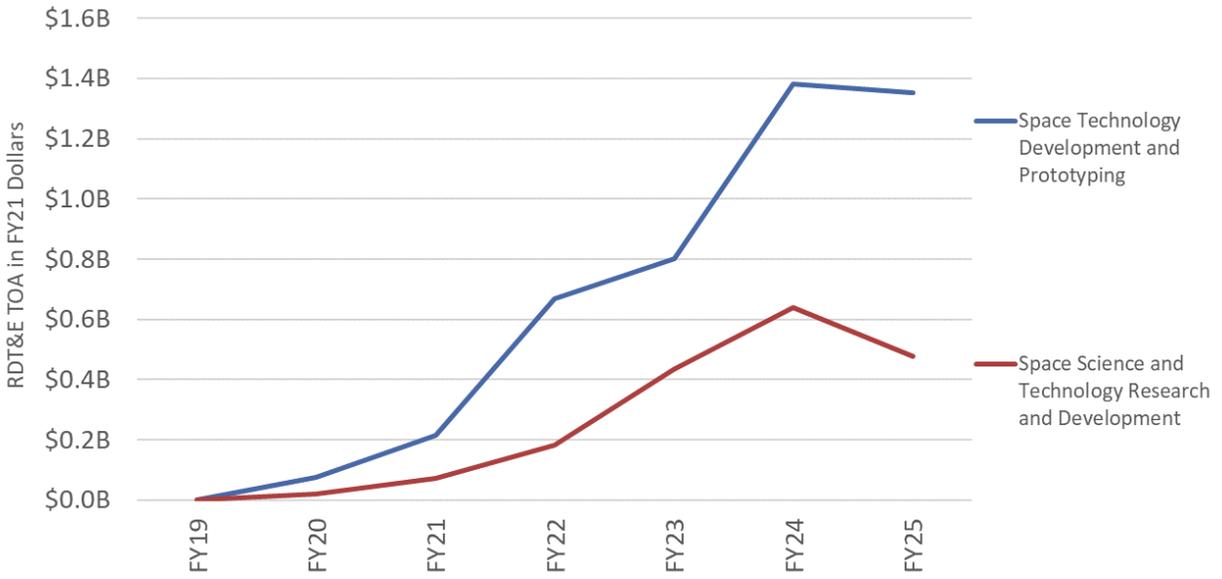


SDA

The Space Development Agency (SDA) receives a boost in funding in the FY 2021 request, particularly in the FYDP projection. The budget requests \$48 million in O&M and \$288 million in RDT&E funding for FY 2021, compared to \$30 million and \$95 million, respectively, in FY 2020. More significantly, the previous budget projected a total of \$0.4 billion in SDA RDT&E funding from FY 2021 through FY 2024, whereas PB21 requests \$4.6 billion over the same years. SDA’s RDT&E funding is divided between two program elements, as shown in Figure 46. The request does not include any funding for space-based interceptors or space-based target discrimination capabilities, which had been included in previous budgets. The SDA’s RDT&E budget projects a total of \$6.6 billion in funding over the FYDP (FY 2021 through FY 2025), and the bulk of this funding is for the development of proliferated low Earth orbit (LEO) constellations of satellites for data transport and missile sensing.⁹²

⁹² U.S. Department of Defense, *Department of Defense Fiscal Year (FY) 2021 Budget Estimates: Space Development Agency, Defense-Wide Justification Book Volume 5 of 5, Research, Development, Test & Evaluation, Defense-Wide* (Washington, DC: February 2020), https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2021/budget_justification/pdfs/03_RDT_and_E/SDA_P_B2021.pdf.

Figure 46: Space Development Agency RDT&E Funding



6 | Final Thoughts

The FY 2021 request projects that the overall national defense budget will remain essentially flat for the foreseeable future, adjusting for inflation. Below this steady topline budget, however, DoD is making some significant shifts in how it plans to allocate funding. Relative to last year's request, DoD is allocating more funding for military personnel costs and less for O&M than previously planned. Procurement funding is projected to be lower than previously planned for the next few years before rebounding, while RDT&E funding is higher than planned in PB20 but still declines in real terms over the FYDP.

Difficult Trade-offs

The FY 2021 budget does not position DoD to grow force structure substantially, as the Trump administration previously indicated it planned to do.⁹³ Specifically, the higher costs of military personnel projected in this budget are not in proportion to the growth in the size of the force. The MILPERS budget in FY 2021 is 4.6 percent higher, adjusting for inflation, than it was in FY 2020, yet the total active duty military is only 1 percent larger (with virtually no net change in the size of the guard and reserve).

Higher personnel costs will make it more difficult to grow the size of the force in the future, even if the budget is increasing. In a flat or declining budget, higher personnel costs make the trade-offs among force structure, modernization, and readiness even more difficult. The FY 2021 request provides a preview into these difficult trade-offs. The budget shifts the allocation of funding to maintain force structure by making sacrifices in modernization through cuts in planned procurements and declining RDT&E funding over the FYDP. Moreover, the planned reduction in O&M funding relative to last year's request could ultimately impact the readiness of the force—even though it may be aimed at driving efficiency—because unrealized efficiency savings could lead to deficiencies in maintenance and training accounts.⁹⁴

Future Challenges

This budget was developed and submitted before the Covid-19 pandemic led to a global economic crisis of a magnitude not seen since the Great Depression. The long-term effects of the pandemic are

⁹³ Ali Vitali, "Trump Calls for Increased Defense Spending, More Military Might," NBC News, September 7, 2016, <https://www.nbcnews.com/politics/2016-election/trump-calls-increased-defense-spending-more-military-might-n644056>.

⁹⁴ The relationship between readiness and O&M funding is not well established. According to the Congressional Budget Office, DoD "has not been able to clearly identify the relationship between the department's O&M spending and the readiness of military units." Congressional Budget Office, *Linking the Readiness of the Armed Forces to DoD's Operation and Maintenance Spending* (Washington, DC: April 2011), 2, <https://www.cbo.gov/sites/default/files/112th-congress-2011-2012/reports/04-25-readiness.pdf>.

just beginning to be understood as of the time of this writing. In a press conference near the beginning of the crisis, Chairman of the Joint Chiefs of Staff General Mark Milley noted that, “it’s not going to be business as usual. We’ve got to take a hard look at how we as a military, we as the Department of Defense conduct operations in the future, and what we need to do . . . to apply those lessons learned and implement them so that we can continue to be effective in a ‘post-Covid world.’”⁹⁵ Indeed, the pandemic revealed some vulnerabilities in U.S. military forces, such as the inherent risks of aggregating large numbers of personnel in confined spaces (such as ships and submarines). It also exposed some supply chain vulnerabilities from dependencies on overseas suppliers and financially fragile vendors at lower tiers of the industrial base. The relief provided in the CARES Act helped bolster the defense industrial base and prevent worse disruptions—particularly the authority granted in Section 3610 to continue paying contractors when they were not able to work. Because this authority did not come with additional funding, DoD programs had to use existing funds for this purpose and not all of the work that was planned was accomplished. Additional funding will be needed to replenish these accounts to accomplish work that was deferred or delayed due to the pandemic. DoD estimates that the additional costs incurred due to lost productivity is roughly \$10.8 billion for the 90-day period from March 15, 2020 to June 15, 2020, and this figure is likely to continue growing.⁹⁶

Perhaps the most critical challenges for DoD in the coming years are the effects the pandemic is having on the economy and the overall fiscal environment. Before the pandemic and the ensuing economic crisis struck, the federal deficit was estimated to exceed \$1 trillion in FY 2020. In June 2020, the CBO estimated that due to the additional stimulus spending enacted through the end of May and the lower projected revenues from the economic crisis, the deficit would top \$3.7 trillion in FY 2020 and \$2.1 trillion in FY 2021.⁹⁷ Additional stimulus spending would push these figures even higher. To put it in perspective, this is the largest federal deficit ever incurred, even when adjusted for inflation—higher than the deficits for all the years of World War II combined. However, as a percentage of GDP, the FY 2020 deficit is not the highest ever, topping 18 percent of GDP in FY 2020 compared to a peak of nearly 30 percent of GDP in FY 1943 and 9.8 percent of GDP at the height of the Great Recession in FY 2009.⁹⁸

The level of defense spending is ultimately a political choice that can be influenced by many factors. Previous inflection points in the defense budget, both up and down, have been influenced by wars, shifts in strategy, changes in the threat environment, and economic conditions. The federal deficit has been a driving factor in the two most recent downturns in defense spending in the late-1980s and the early-2010s. As shown in Figure 47, the federal deficit grew significantly during the early-1980s,

⁹⁵ Mark Esper and Mark Milley, “Defense Department Senior Leaders Brief Reporters on DOD Efforts Regarding COVID-19,” (press briefing, April 14, 2020), <https://www.defense.gov/Newsroom/Transcripts/Transcript/Article/2152052/defense-department-senior-leaders-brief-reporters-on-dod-efforts-regarding-covi/>.

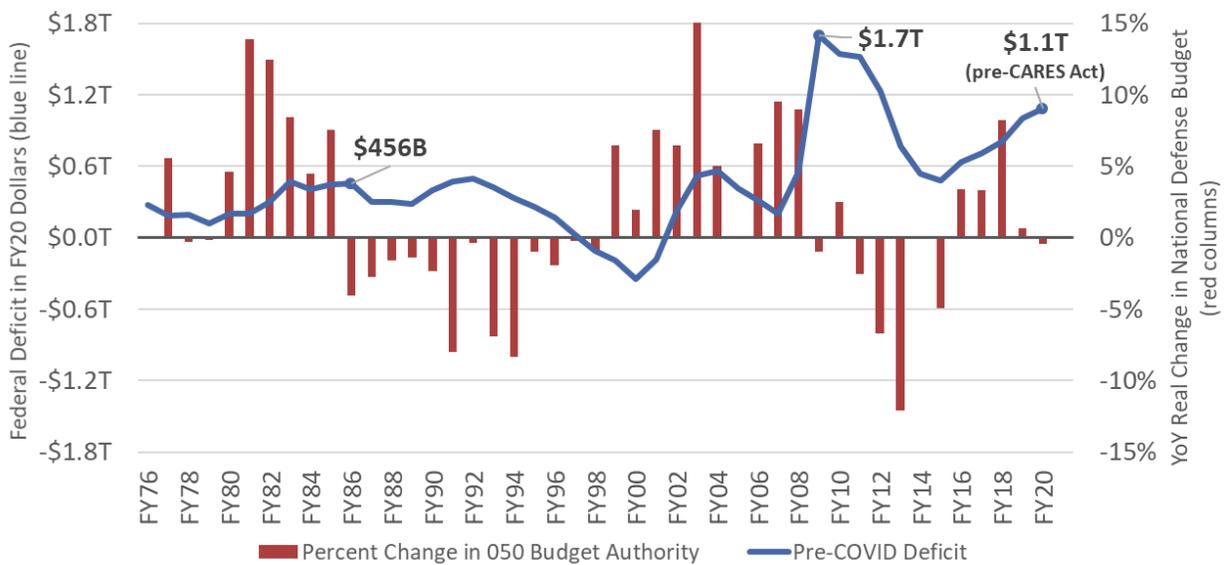
⁹⁶ Department of Defense, *FY 2020 DoD COVID-19 Response and Stimulus & COVID-19 Recovery Acquisition Contract Cost Overrun* (Washington, DC: August 2020).

⁹⁷ Phillip L. Swagel, “Budgetary Effects of the 2020 Coronavirus Pandemic,” letter to Senator Rick Scott, June 5, 2020, <https://www.cbo.gov/system/files/2020-06/56388-CBO-Scott-Letter.pdf>.

⁹⁸ “FY 2021 Budget Request: Historical Table 1-1,” White House Office and Management and Budget, February 2020, https://www.whitehouse.gov/wp-content/uploads/2020/02/hist01z1_fy21.xlsx

reaching the highest level since the end of World War II, adjusting for inflation. In response to the deficit, Congress passed the Gramm–Rudman–Hollings Balanced Budget Act in 1985. This bill established caps on the deficit and an enforcement mechanism, known as sequestration, to automatically cut defense and non-defense funding if the deficit caps were breached. This directly led to the start of the downturn in the defense budget in FY 1986.⁹⁹

Figure 47: Federal Deficit and Changes in the National Defense Budget



The next major downturn in defense spending followed the 2008 financial crisis. The deficit peaked in FY 2009 at \$1.7 trillion (in FY 2021 dollars), which at the time was again the highest level since the end of World War II. Two years later, Congress responded to this deficit pressure by passing the Budget Control Act of 2011. While the budget was already declining by that time, mainly due to the drawdown of forces in Iraq and Afghanistan, the BCA included budget caps that further constrained the defense budget.

While history is not a reliable predictor of the future, it is helpful for understanding the range of plausible outcomes. The conditions that led to deficit-driven defense downturns in the past—namely, a rapidly rising and record-setting deficit—are occurring at present. While there does not appear to be appetite to cut the defense budget in the remainder of FY 2020 or in FY 2021, as is evident by the inclusion of additional defense funding in stimulus bills, the political environment could shift markedly once an economic recovery is underway in FY 2022 or FY 2023.

The main challenges for the next presidential term of office, regardless of who wins the election, will be to support the economic recovery and reduce the federal deficit to sustainable levels—objectives

⁹⁹ Congressional Budget Office and Office of Management and Budget, *Sequestration Report for Fiscal Year 1986: A Summary* (Washington, DC: January 1986), 9, <https://www.cbo.gov/sites/default/files/99th-congress-1985-1986/reports/86doc02b0.pdf>.

that are inherently in tension with one another. The future of the defense budget will depend in no small part on this tug-of-war between economic stimulus and fiscal austerity. If the balance of political favor shifts to austerity, defense is likely to be part of the calculus. Given the trends in the defense budget identified in this report, fiscal austerity will inevitably force DoD to consider difficult strategic choices that it has largely avoided until now. DoD can preserve strategic maneuver space by beginning to prepare for a drawdown now. But the longer these preparations are delayed, the narrower the range options available will become.

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